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Gas Journal

VOL. 296. 110th YEAR. LONDON, OCTOBER 15, 1958 No 4970 PRICE 1/6

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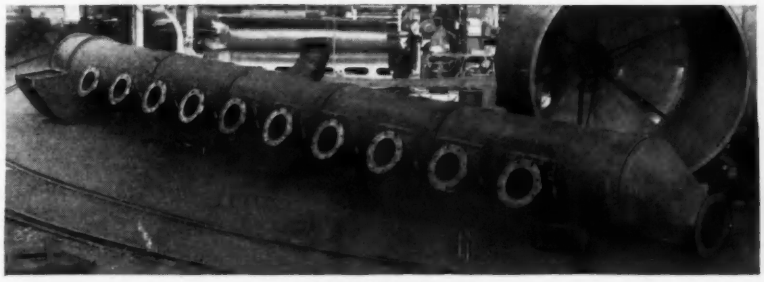
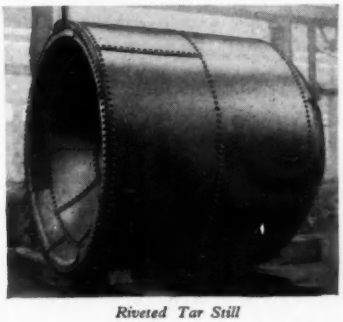
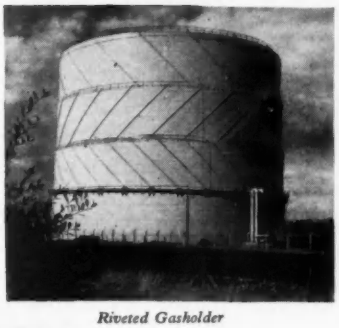


Riveted Process Vessel



Riveted Tar Still



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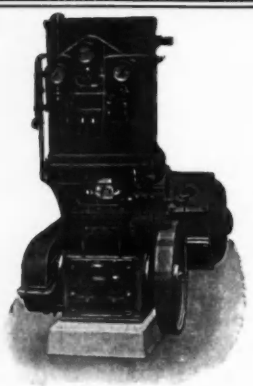

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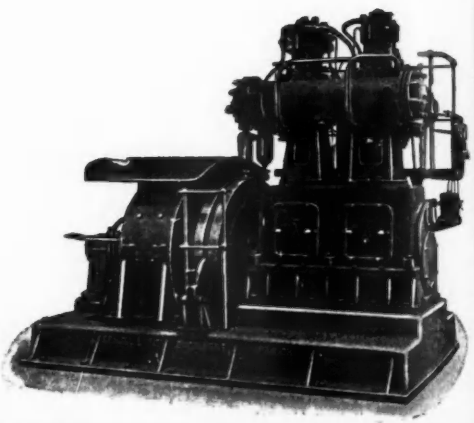

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Gas Journal

VOL. 296 NO. 4970 OCTOBER 15, 1958
110TH YEAR

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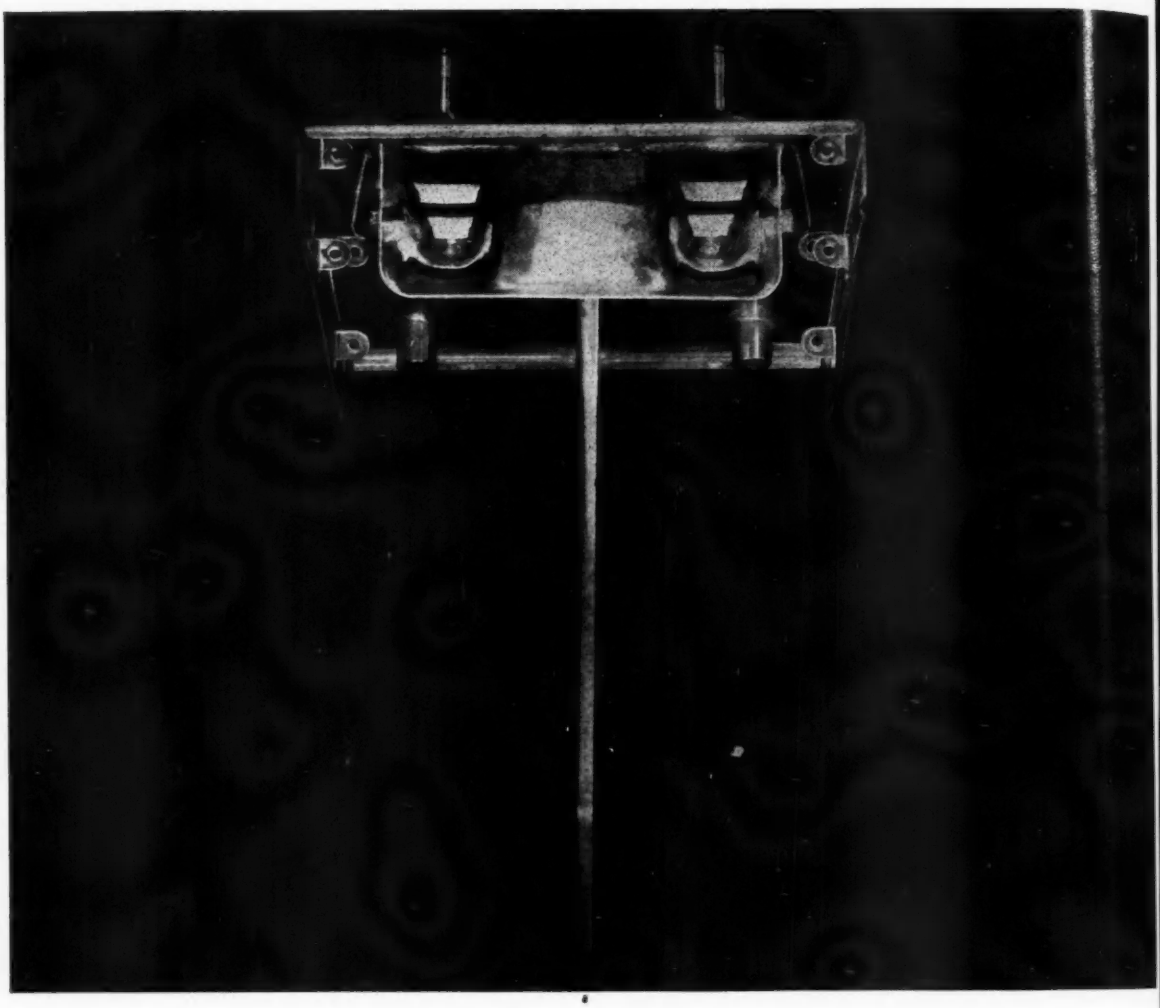

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Gas Journal

VOLUME 296. No. 4970 OCTOBER 15, 1958. 110th YEAR

The Nine Year Itch

LIKE Autumn leaves and the first cold in the head, October brings that somewhat indigestible mass of verbiage and statistics which annually record the work of the Gas Council and the area boards. Since they first appeared on the post-nationalisation scene the reports have not revealed any signs of a desire on the part of their compilers to present the information in a more logical and convenient form; there has on the other hand been a subtle development in the art of camouflaging the less attractive pieces of information. However, if the style of presentation has not improved with the years, the same cannot be said of the state of the industry which the reports describe, nor of the spirit which infuses them. The fact is that at no time since the industry became publicly owned in 1949 has it been in such a fever of technical experiment and development. It really seems as if, after those understandably depressing days of early nationalisation with their worrying changes in the traditional order of things and the legacy of post-war apathy, and then the all-too-slow realisation of three or four years ago that unless something was done quickly things would get very tough indeed, the industry is putting on a spurt such as it has never known in all its long history. There are at least five separate new methods of gas supply being investigated, while the whole dream of centralised gas production and a national gas grid becomes daily nearer reality. For example, during the year under review 75 more gasworks were closed down, though the gas-making capacity of the industry increased by 23%; only 536 of the 1,050 production plants in existence at vesting date now remain in operation.

In this connection it is interesting to see that there has been a net increase of 1,933 miles of main, bringing the total length up to 92,023 miles. Of the works in active production, however, there is still a large proportion of small units, and although wherever possible these are being connected to larger units, there still remain 483 making less than 5 mill. therms annually, of which 234 produce less than .5 mill. therms. The influence of large units and the obvious effort to improve the working of the small production plants are reflected in the improved efficiency of carbonisation which has risen again over the year from 75.1 to 75.8 therms per ton of coal carbonised. The whole position can be assessed when it is realised that with a capital expenditure of £22.7 mill. new manufacturing capacity of 124 mill. cu.ft. has been brought into use, 136 mill cu.ft. per day scrapped, and the total capacity brought up to 2,528 mill. cu.ft., or 12 mill. therms per day.

The ever-rising price of suitable carbonising coal has caused the industry to look for non-traditional means of gas production. This tendency has continued during the year under review, which shows a further reduction of 1.643 mill. tons of coal, with a resultant fall in coal gas production of 103 mill. therms, or about 5%, and increasing production of water gas of 109 mill. therms, and of producer, oil, and other gases of 8.3 mill. therms, or 39% and 24% respectively. With gas purchased from the coking industry and elsewhere up by 7.3% to 500 mill. therms, the total available at 2,897 mill. therms shows a slight increase of 1.7% over the previous year.

The smaller quantities of coal carbonised have had their effect on the production of crude coal tar and the quantity of benzole extracted, which have fallen slightly by 4.7% and 2.4% respectively. Sales of sulphate of ammonia were lower, but ammonia liquor showed a remarkable rise to 35 mill. gal., or 70%.

The Gas Council's programme for research into new gas-making processes continues and the notable advances to be seen in the period under review were the decision to build a full-scale oil hydrogenation plant at Partington, near Manchester, and the Lurgi plant for the gasification of low grade coal at Westfield, Fife. This is a most important step forward in the campaign for using not only unconventional but cheaper raw materials for gas-making, and these plants may be said to give an idea of the shape of things to come. Although, initially, oil will be the feedstock to be used at Partington, as soon as the necessary data have been collected small, low grade coal will be substituted, with

considerable reduction in the cost of gas production and, possibly, a fall in the sulphur content of the gas available for distribution. The plant at Westfield, which is not experimental in quite the same sense, is nevertheless the first of its kind in Great Britain. A marked fall in production costs is expected, since not only will the raw coal be of the poorest quality but it will be fed directly by conveyor belt into the Lurgi generator.

Experiments are going forward in the use of light petroleum distillates in the South Western Gas Board for the production of a low sulphur gas by hydrogenation, and in the South Eastern Gas Board for the use of these distillates in water gas plants in place of gas oil or heavy oil. If successful, their use in this way will greatly increase the thermal capacity of the plant.

The year brought the latter Board's Isle of Grain plant nearer completion; towards the end of the current year this should be producing 20 mill. cu.ft. per day. Further developments are forecast for the installation of a plant which has been developed by the Shell Petroleum Company in which gas is made by the partial combustion of oil with oxygen under a pressure of 300 lb. per sq. in.

Another bold step initiated during the year was the planned importation of liquefied natural gas from the Gulf by the North Thames Gas Board, which is now building a suitable installation for its reception and storage at Canvey Island on the Thames estuary. It is hoped to reform this gas to a suitable calorific value and admit it into the existing distribution system.

Although, at one time or another, we have devoted considerable space to all these developments, we have reviewed them in this way in order to illustrate the point we made at the outset—that the industry has never known such a period of intensive research. As we have suggested, all these experiments are bound in with the conception of a national gas grid. It is most reassuring to see from the report that the Gas Council is studying the economics of such a grid with a view to centralising all gas production near coalfields and refineries and then feeding the gas at high pressure into arterial mains. With these developments and the work being done on the reduction of the total sulphur in town gas we feel that the report shows the gas industry to be very much alive to the changing conditions of the present and to be able to meet fuel distribution needs.

We do not propose to deal with the sales situation at this juncture. The results this year broadly follow the pattern set in the years immediately past and it appears fairly obvious that unless some very startling development in appliance design bursts upon us—and we wish to Heaven that it would!—further progress on this front is directly dependent on the work of the production engineers. It is cleaner, and perhaps cheaper, gas which will really put the sale force into top gear. Throughout the whole situation the predominating factor is time. How nice it would be if the Nine Year Itch on the production side of the industry were to be followed by, say, the Eleven Year Itch on the sales side! It could happen.

Knock! Knock!

NO doubt Sir Christopher Hinton, Chairman of the Central Electricity Generating Board, had good reasons for belittling the dangers arising from the pursuit of nuclear energy when he gave the inaugural address to Westminster Medical School last week. Referring to 'the exaggerated and disproportionate fear of things nuclear,' he claimed that people's doubts and fears were not logically related to the extent of the hazards. Perhaps so, and we can appreciate Sir Christopher and his colleagues being somewhat irritated by the headlines relating to the Windscale accident which continued in the newspapers for two months. Reasonable defence of something which he believes is being unjustly labelled a 'bogey' is a perfectly proper action on the part of a man in his position, but in doing so unjustifiably to 'knock' a competitive industry is highly improper. Speaking of atomic plants Sir Christopher said: 'By no stretch of the imagination can an accident be visualised which would cause the number of casualties that are caused by the coal gas industry where, without great outcry or complaint, we tolerate 740 deaths a year from accidental leakages of domestic gas and another 2,500 deaths a year from voluntary gas poisonings.'

This red herring is inadmissible on two counts: It implies that the gas industry itself is doing nothing about the gassing fatalities of which it is in fact acutely conscious; and it fails to recognise that these accidents occur in supplying gas to nearly 13 mill. consumers.

In the circumstances his statement can only be regarded as a political *gaffe* and the *Manchester Guardian* was quick to see a flaw in the argument: 'An agile person can expect to escape death as a pedestrian. A careful one who attends regularly to his gas taps can expect not to be among the 700 who are killed each year by accidental coal-gas poisoning. But no agility and no thought can help if there is strontium in the air, and so people are afraid.'

Far from proving his point, Sir Christopher only succeeded in adding to the public nervousness of which he complains. Of course the public is afraid of the unknown, and we suspect that even the Chairman of the C.E.G.B. may be keeping his fingers crossed. Hush, hush, whisper who dares, Sir Christopher Hinton is saying his prayers.

Potato Cakes All Round

THERE are many reasons why we should lament the impending retirement of Mrs. Eileen Murphy. Not only has she made a unique contribution to the industry in her capacity of Home Service Officer to the Gas Council and in connection with her work with various important committees, but at a time when freedom of speech is suffering from the restrictions imposed by the bureaucratic control of the industry she has stoutly refused to relinquish her right to say what she likes when she likes and to whom she likes. The result can be both stimulating and devastating, but it also has the inestimable advantage of revealing facts in the cold light of reason—even though the speaker sometimes finds herself in hot water! We shall miss her refreshing candour just as we shall miss the way in which her feminine intuition and love of gossip have blended with her more typically masculine shrewdness in business matters.

That these feelings of regret at Eileen's retirement are widely shared is confirmed by the quite spontaneous desire on the part of many people both in and outside the gas industry to hold a dinner in her honour. This will take place at the Café Royal on December 1. Arrangements are in the hands of the Chief Home Service Advisers and Miss J. Houghton; all particulars may be obtained from the latter at Watson House Research Centre, Townmead Road, Fulham, S.W.6.

Personal Notes

SIR HAROLD SMITH, K.B.E., has been re-appointed Chairman of the Gas Council when his present term of office expires on December 31.

MR. C. RAYNER, Secretary of Oxley Engineering Co., Ltd., has been appointed to the Board of Directors.

Obituary

MR. CECIL CHARLES MASON, O.B.E., who had been a joint Managing Director of the Cambridge Instrument Co., Ltd., from 1910 until 1941, when he retired although remaining on the Board, has died, aged 77.

MR. JONATHAN READ has died aged 75. Mr. Read joined the former Sudbury Gas and Coke Co., Ltd., in 1916 and was appointed Secretary in 1921. He held this position until Vesting Day and retired in 1950.

MR. CHARLES FREDERICK HUEBNER, who has been Chief Buyer for British Oxygen Co. Ltd. since 1947, has been elected President of the Purchasing Officers' Association for 1958-59. MR. WALTER H. PARRY has been elected National Chairman.

MR. F. J. HAVENITH has been appointed local Resident Director by George Kent, Ltd., on the Board of their Belgian Subsidiary Company, Kent-Continental, S.A.

MR. K. W. FRANCOMBE.—We regret we were misinformed regarding Mr. Francombe's change of appointment at Whessoe Ltd., and would correct the statement appearing in our Personal Column on October 8. Mr. Francombe has relinquished his appointment as Manager of the Chemical Engineering Department in order to devote himself wholly to the investigation of new processes and developments in the gas and fuel industries and to other managerial matters.

MR. H. E. COOPER has been appointed Managing Director of G. A. Harvey & Co. (London) Ltd. Mr. Cooper, first appointed to the Board in 1946, has been acting as Deputy Managing Director since May of this year. MR. I. A. MARRIOTT succeeds MR. P. T. BLISS as Sales Director. Mr. Bliss, who has been with the Company for 50 years, retires on December 31.

Diary of Forthcoming Events

October 16.—MIDLAND JUNIORS: Visit to works of Fisher & Ludlow, Ltd., Birmingham.

October 17. — SCOTTISH WESTERN JUNIORS: 24, Walls Street, Glasgow. Paper on the reorganisation of consumer services within Glasgow District by Mr. A. Mitchell, followed by a tour of the Consumer Service Bureau. 7 p.m.

October 18. — YORKSHIRE JUNIORS: Bridge Street, Leeds. Annual General Meeting. 2.30 p.m.

October 18. — WESTERN JUNIORS: Radiant House, Bristol. Installation of new President followed by a paper by Mr. R. G. Laycock, Solicitor to the South Western Gas Board. 2.30 p.m.

October 20.—WOMEN'S GAS FEDERATION: Headquarters' Branch: Murdoch House, 1, Grosvenor Place, S.W.1. 'Careers and Opportunities in the Gas Industry,' by Dr. A. B. Badger. 2.30 p.m.

October 20.—EASTERN G.C.C.: Connaught Rooms, Great Queen Street, Kingsway, W.C.2. Meeting at 11 a.m.

October 22.—INSTITUTE OF FUEL: Great George Street, London, S.W.7. A discussion of 'Technical Difficulties Experienced by Industry in Complying with the Clean Air Act and Regulations,' by Members of the F.B.I. Air Pollution Panel. Opening speaker: H. E. Hopthrow, C.B.E., of I.C.I. Ltd. 5.30 p.m.

October 22.—SOUTHERN G.C.C.: Civic Centre, Southampton. Special Meeting at 11 a.m.

October 23.—COMBUSTION ENGINEERING ASSOCIATION (SOUTHERN REGION): St. Ermins Hotel, Westminster, S.W.1. Meeting includes paper on 'Operating Problems in the Use of Solid and Liquid Fuels in the Southern Area' by H. Kinsey, of the National Industrial Fuel Efficiency Service. 10.30 a.m.

First-aid

NORTH THAMES AND SCOTLAND TRIUMPHANT

NORTH THAMES GAS BOARD won the men's event in the gas industry's national first-aid competitions in London on October 10—by one point. They scored 299 out of a possible 400, while the East Midlands Board obtained 298 points. The Scottish Board were third.

Eight boards competed in the women's tests, Scotland winning with 306 points, East Midlands coming second with 293½, and the North Western Board third.

Challenge trophies and plaques were presented by Mr. Wilfred Bailey, Secretary, Gas Council.

The tests, which were kept secret until the teams underwent them, were held under the general rules of the St. John Ambulance Association.

The winning teams will compete for the St. John Ambulance Grand Prior's Trophy next month.

CORRESPONDENCE

Fuel Efficiency Exhibition

DEAR SIR,

We note from a description in your October 1 issue of the exhibits on our stand at the Fuel Efficiency Exhibition, that incorrect references have been made to two of our controls.

In the last paragraph of your description you refer to both the Junopilot and the bridging ladder burner as being recent additions to this Company's range. In fact, both have been in the range since 1952, and both were advertised in the technical Press, including the 'JOURNAL,' around that time.

At that period multi-burner control was an urgent problem, and it is well appreciated in the gas industry that we solved it satisfactorily by the design and marketing of these two patented Perl developments. The Junopilot particularly was very readily received, and was approved in an Industrial Gas Development Committee's official report as far back as 1953. Both were included in the I.G.D.C. report, 'Flame Protection Practice (1956),' as accepted and recommended systems.

Since we noticed that a control similar to our Junopilot was recently given prominence in the 'JOURNAL' by the publication of a recent Industrial Gas Development Committee report, your incorrect statement in describing our exhibits may be construed to indicate that our Junopilot came on to the market subsequently, whereas the reverse is very much the case.

As this is a matter of importance to us, may we ask you to be good enough to publish this letter, so that any mistaken impression created may be corrected?

Yours faithfully,

I. M. PERL.

Managing Director,
Perl Controls, Ltd.,
October 3, 1958.

H. & G. secure contract for plant in Japan

HUMPHREYS AND GLASGOW, LTD., of London, have been awarded a contract to engineer and build a plant at Yaizu, Japan, to make town gas from heavy fuel oil by the Onia-Gegi process. It will be the first of its kind in Japan.

Yaizu is a fishing port about 150 miles from Tokyo, with a population of 67,000.

The new plant, ordered by the Tokai Gas Company, will comprise one unit of regenerative Onia-Gegi plant, with ancillary plant. It will be in operation to meet the 1959 winter load, and will produce 500,000 cu.ft. of gas per day. A second unit is planned for 1960, when Onia-Gegi plant will become the only gas-making plant on the works.

Special equipment, including catalyst and hydraulic and pneumatic equipment, will be supplied from the United Kingdom. The rest of the plant will be manufactured in Japan by Ishii Iron Works, Ltd., who are Humphreys and Glasgow licensees.

Engineers from the Ishii company have spent some time in Britain this summer studying the process in design and operation.

BANGOR, CO. DOWN, PLACES ORDER FOR GAS PLANT

BANGOR, Co. Down, Borough Council has accepted the £89,649 tender of Drakes of Halifax, Ltd., for new gas-making plant. The tender was the higher of two received, and was accepted after a sub-committee had visited installations at Newtownards and Portadown. The other tender amounting to £85,947 was from West's Gas Improvement Co., Ltd.

Alderman Francis Logan, Chairman of the Gas Committee, paying tribute to the work of the Gas Manager, Mr. J. A. Derbyshire, and officers of the undertaking, said the Gas Committee was looking forward to the increased efficiency which would follow the installation of the plant.

Committee meets

The committee which is examining whether the gas and electricity industries can work more closely together met in Edinburgh recently under the chairmanship of Sir Cecil Weir. They had discussions with representatives of the Scottish Gas Board and the Electricity Board, the National Council of Women, the Scottish Women's Group on Public Welfare, and the Scottish District Council's Association.

Bognor works to close

The Bognor works of the Southern Gas Board will cease manufacture on November 1. Employees at the works and the appropriate trade union representatives were informed of the Board's decision on August 27. After November 1, Bognor will be supplied with gas from Hilsea works, Portsmouth.

NEW MELTING FURNACE COMPANY

BIRLEC, LTD., and Efco, Ltd., electric furnace manufacturers, announce that negotiations between them for the formation of a new company to take over certain sections of their business have reached an advanced stage. It is intended that the new company shall be called Birlec-Efco (Melting), Ltd., and that its offices shall be near Birmingham, at Aldridge, Staffs.

The intended scope of the Company is the design and supply of all types of electric melting furnaces for the ferrous and non-ferrous metals industries, together with smelting furnaces and induction heating equipment.

The personnel of the Company will be drawn from the appropriate divisions of Birlec, Ltd., and Efco, Ltd., thus combining in one organisation the specialist techniques and extensive experience of both companies.

Birlec, Ltd., and Efco, Ltd., will continue independently to manufacture their respective heat treatment furnaces and other plant.

NORTHERN JUNIORS VISIT CALDER HALL

THE first meeting of the 1958-59 session of the Northern Junior Gas Association was a visit to the Atomic Energy Authority at Calder Hall in which some 80 members took part.

Members were welcomed at Calder Hall by the President of the Association, Mr. R. S. Longhurst, Carlisle. Following the tour, an interesting lecture was given on the working of the reactors. Calder Hall was Britain's first nuclear power station and the first in the world to supply electricity to a national supply network on an industrial scale.

Members were entertained to tea at the Oakley Hotel, Whitehaven, by invitation of Mr. A. R. Croft, Divisional General Manager, Cumberland Division.

Holder demolished

One of two gasholders in Station Road, Dorridge, Birmingham, has been demolished after many years' service. The second is to remain as a stand-by container in the event of an emergency.

LEEDS TO PREPARE CLEAN AIR ORDER FOR CITY CENTRE

LEEDS CORPORATION is to prepare a smoke control order for 1,100 acres in the centre of the city which may come into force in 1960. It will be one of the largest smokeless zones of its kind in the country.

A preliminary survey of the area has revealed about 5,500 domestic, 3,500 commercial, 700 industrial, and nearly 1,000 other premises. Many of the houses will be affected by slum clearance proposals but those that remain will probably require conversion, varying in cost from £5 to £40.

For domestic premises provision is made for a contribution from the local authority of 7/10 of authorised expenditure. There is also provision for conditional exemption of buildings or fireplaces where the use of authorised fuels would either be impracticable or would make impossible demands upon the supplies of such fuels.

New £1 mill. tonnage oxygen plant

A project which will help to increase steel production in Lincolnshire was inaugurated recently by British Oxygen Gases Ltd., when a new £1 mill. tonnage oxygen plant was opened at Scunthorpe. It will be capable of supplying three steel works there with up to two hundred tons of oxygen per day.

This new plant is claimed to be the largest to be fully commissioned in Britain for the supply of oxygen in the quantities now required by steelworks, and to be the first with a daily capacity of two hundred tons.

Flexible barge

A demonstration was carried out in Southampton Water of the latest and largest model of flexible oil barge being developed by the Government-sponsored National Research Development Corporation. The idea is to tow liquid cargoes in rubber and nylon envelopes which, after discharge, can be rolled up and crated back to the starting point for another load. The model tested carried 40 tons of paraffin.

Telephone number changed

A change of telephone number is announced by Kay & Co. (Engineers), Ltd., Bolton Brass Works, Blackhorse Street, Bolton, Lancs, manufacturers of the Kontite range of compression fittings for gas, water, waste, soil, air and oil pipes. The new number is Bolton 3041 (4 lines). The Company has also installed a Telex system, Telex number 63-186.

Colourful opening meeting of the London and Southern Juniors

TRADITIONAL VENUE AGAIN AFTER 25 YEARS

THE London and Southern Junior Gas Association met together for their first meeting of the new session on October 3 in an atmosphere of almost unprecedented cordiality amid surroundings which were as congenial as any professional body might hope for.

They were celebrating their return to Westminster Technical College, as far as general meetings were concerned, after an interval of nearly a quarter of a century. Curtains for the backcloth of the platform in the colourful new assembly hall had been put up only that day—and this was the first time that the hall had been used.

Mr. C. H. Purkis, of Watson House, who was inducted as President for the ensuing year, did not lose his opportunity of stressing the historical import of the meeting. 'We feel in a sense that we are returning home,' he said in his presidential address. 'The gas industry has been a strong supporter of the College and many of our members have studied or taught here for day or evening classes. The Deputy Chairmen of the North Thames and Eastern Gas Boards, Mr. Bruce and Mr. Dyde, are members of the governing body. We congratulate the College on the completion of their new assembly hall which has made our return possible, and perhaps we may dare to express the hope that we are here to stay.'

From 1910 until 1933 the Association met continuously at the College (then the Institute), until the accommodation then offered became inadequate.

Mr. Purkis called on Mr. R. N. Le Fevre, Past-President of the Association, and Mr. Taylor-Cook, Principal of the College, to speak on this occasion. But his master-stroke in creating the atmosphere was in asking Mr. Eric Benton, who had read a paper called 'Small Gas Governors' on January 23, 1934, to make comparisons between a meeting in that year and in 1958.

Before he delivered his presidential address, 'Changes in the Domestic and Commercial Gas Loads,' Mr. Purkis presented the immediate Past-President, Mr. J. E. Gray, with some silver-plated ware, as a token of the Association's appreciation of his services.

The presidential address (to be published in November's 'GAS SERVICE') opened with a plea for three courses of action by members: (1) To use the Association as a means of widening knowledge and experience in fields not immediately concerned with their daily work; (2) to speak in discussions, and (3) to give particular support to visits.

Mr. R. K. Harrison proposed a vote of thanks to Mr. Purkis.

The Milbourne Prize was presented to Mr. A. R. Bovington for his paper delivered during the session entitled 'The Glory Hill to High Wycombe and Romford to Shellhaven Pipelines.' Mr. J. W. Heeley won the President's Prize for 'Maintenance of Intermittent Vertical Chambers at Croydon.'

WEST RIDING CLEAN AIR CAMPAIGN IS LAUNCHED

THE West Riding clean air campaign was officially opened last month by Mr. Arthur Creech Jones, M.P., in Wakefield. The meeting was presided over by the Mayor of Wakefield, Alderman D. Longshaw, who officially welcomed Mr. Creech Jones.

Thanks

A vote of thanks to Mr. Creech Jones for opening the campaign, and to Alderman D. Longshaw for presiding at the meeting, was proposed by the Chairman of the West Riding Clean Air Advisory Council, Mr. E. J. Winfield, Chief Public Health Inspector, Castleford Borough Council, and seconded by the Chairman of the Wakefield City Health Committee, Councillor L. Boston.

Following the opening ceremony the official party, together with representatives from the 77 constituent local authorities of the West Riding Clean Air Advisory Council inspected the exhibition and then proceeded to the Council Chamber, Town Hall, Wakefield, where they were the guests of the Mayor for afternoon tea.

COOK BY GAS OR GO, COUNCIL TELLS TENANT

NEWRY (CO. DOWN) URBAN COUNCIL recently refused permission to a tenant in a Council house to install an electric cooker. Mr. J. Bradfield, a member of the Council's Gas Committee, argued that the Council tenancy agreement should be governed by the rule: 'If you don't burn gas, you don't get a Council house.'

Mr. E. Ruddy said it would be coercion to demand that Council tenants should burn gas exclusively; but the Town Clerk, Mr. G. Cronin, recalled that many years ago, with the advent of electricity, the then Urban Council in Newry would not permit their tenants to use electricity even for illumination.

He explained that if the Council decided against the request and if the tenant in question persisted in installing an electric cooker in his home, they had the power to go to the courts for an eviction order.

Payment by cheque Bill planned

Mr. Graham Page, the Member of Parliament largely responsible for recent legislation on cheques, plans to introduce next Session a Private Member's Bill as the first stage in the move to authorise the payment of all employees by cheque.

Agreements

This will seek to give legal sanction to agreements between an employer and an employee whereby the employer transfers the sum due from his banking account to the employee's banking account.

If this measure is successful, the next stage will be to introduce legislation authorising payment by cheque in cases where the employee elects to be paid in this way.

North of England Section, I.G.E., visit new town of Peterlee

MANY members of the North of England Section of the Institution of Gas Engineers saw one of Britain's new towns recently when they attended a meeting of the Section held in the new town of Peterlee, Co. Durham.

Under the Chairmanship of Mr. F. J. Webster (Stockton) a paper entitled 'The New Towns of County Durham—Their Economic and Social Contribution,' was presented by the General Manager and Solicitor of the New Town Development Corporation of Peterlee and Newton Aycliffe, Mr. A. V. Williams.

While the subject of gas received only minor reference in the paper, the description by Mr. Williams of the many and varied facets of the work involved in creating a new town was of much interest, and an excellent discussion followed.

A vote of thanks to Mr. Williams was proposed by Mr. A. Field (Penrith) Vice-Chairman, and thanks for the hospitality provided were expressed by Mr. K. E. Brown (Newcastle).

Plans for a rectifier house and foreman's offices at the gasworks at Inchgreen, Greenock, submitted by the Scottish Gas Board, were approved by the local Dean of Guild Court.

Gas main is laid under railway without halting traffic

AS MACHINE BORES SLEEVE FOLLOWS ELIMINATING ALL RISK OF CAVE-IN

IN a matter of hours, 100 ft. of 12-in. pipe were laid under the main Banbury to Paddington railway line, without disturbance to rail traffic, with the aid of an Auger-type earth boring machine owned by William Press & Son, Ltd. It is one of two of its size operating in this country.

The machine is capable of boring a steel sleeve or pipe up to 42 in. in diameter and virtually to any length. Its greatest asset is that it can bore under any public thoroughfare, railway or canal without interrupting traffic.

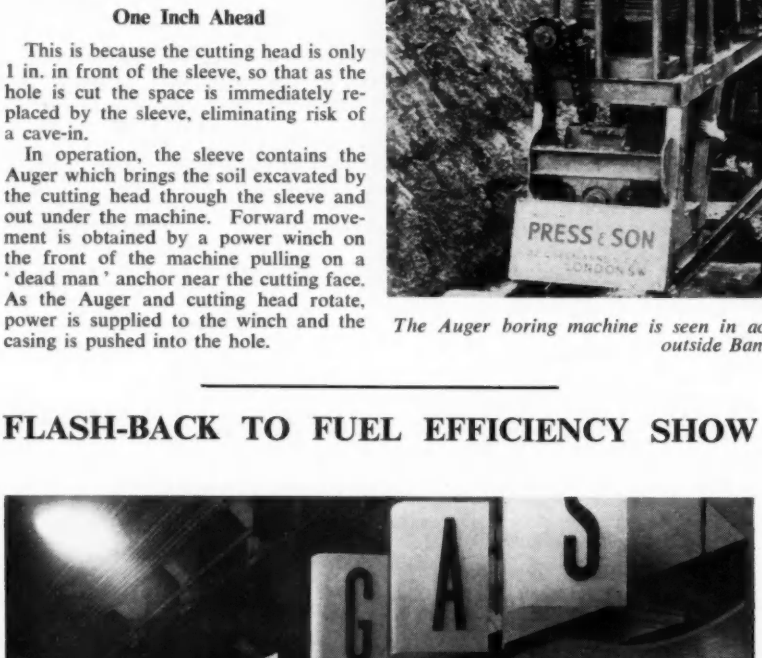
One Inch Ahead

This is because the cutting head is only 1 in. in front of the sleeve, so that as the hole is cut the space is immediately replaced by the sleeve, eliminating risk of a cave-in.

In operation, the sleeve contains the Auger which brings the soil excavated by the cutting head through the sleeve and out under the machine. Forward movement is obtained by a power winch on the front of the machine pulling on a 'dead man' anchor near the cutting face. As the Auger and cutting head rotate, power is supplied to the winch and the casing is pushed into the hole.

The Auger boring machine is seen in action under the Western Region main line outside Banbury station.

FLASH-BACK TO FUEL EFFICIENCY SHOW



The Gas Council's stand at the Industrial Fuel Efficiency Exhibition which ended in London on October 2. (A full report appeared in our GAS IN INDUSTRY *Supplement on October 1.)*

£4 mill. coking plant is inaugurated

THE first part of a new £4 mill. coking plant at Murton, Co. Durham, was formally inaugurated recently when 50 ovens were lighted to start the drying-out process. By the end of November they will be ready for operation. The ceremony was performed by Dr. W. Reid, Chairman of the Durham Divisional Coal Board, and Mr. N. Barker, President of the Cokemen's Union.

The ovens have been built alongside the new Hawthorn shaft and when in full operation will carbonise 1,000 tons of coal daily and produce 250,000 tons of high-grade metallurgical coke a year.

Between 7.5 mill. and 8 mill. cu.ft. of purified gas will be supplied daily to the Northern Gas Board, and by-products will include concentrated ammoniacal liquor, tar, and 1 mill. gal. of crude benzol annually.

The 150 men who will be employed at the works will be mostly drawn from plants in the county which are being closed down.

UP: ***Gas and appliance sales, yield per ton, capital expenditure, mains laid***

DOWN: ***Surplus, domestic sales, persons employed, coke production***

Ninth Year's Results

A MILLION pound drop in the aggregate result of the area boards' trading is a feature of the Gas Council's annual report published yesterday. Whereas all boards achieved a surplus in 1956-57, the 1957-58 figures reveal a deficit in the case of the Southern and South Western Boards.

The aggregate result of the area boards' trading was a net surplus of £2,820,610 (£3,803,856) on a gross income of £388.6 mill. (£370.6 mill.). This surplus was arrived at after charging £24,213,066 (£23,231,018) for depreciation and amounts written off and £20,472,329 (£18,962,499) for interest.

After making adjustments for previous years and bringing in the balances on revenue account at March 31, 1957, totalling £4,648,585 (£3,744,402), a special distribution totalling £2,690,631 by Benzole Producers, Ltd., and a transfer of £150,000 from its reserve fund by the South Western Board, there was an aggregate disposable surplus of £10,305,010 (£8,409,196).

Capital Expenditure

Capital expenditure during the year totalled £55.7 mill. (£51.3 mill.) against an approved figure of £59 mill. Amounts approved for the current year and for 1959-60 are £53.5 mill. and £47 mill. respectively. While the necessity for restricting expenditure in the interest of the national economy is appreciated, the restrictions mean that boards will have to defer, still further, projects necessary if supplies of gas are to be fully safeguarded, and that they will have to forego revenue savings which could otherwise have been effected.

Of the £55.7 mill., £22.7 mill. was spent on manufacturing plant and £14.5 mill. on mains. New gas-making plant of a capacity of 124 mill. cu.ft. a day was brought into use and plant of 136 mill. cu.ft. a day capacity scrapped. Total capacity is now 2,528 mill. cu.ft.—12 mill. therms—a day.

Further increases in costs took effect during the year. Those for raw materials and transport were approximately £8,755,000 for 1957-58 and are estimated at £12,800,000 for a full year, while those for wages and salaries were approximately £3,610,000 for 1957-58 and are estimated at £3,780,000 for a full year.

During the year, there was a net increase of 1,933 miles in the length of mains laid, bringing the total length to 92,023 miles.

There are now only 536 manufacturing works, compared with 1,050 at vesting date, although capacity has increased by 23%. By continuing to concentrate production in the larger and more economic works, a further 75 of the smaller works were closed during the year.

New gas-making plant to a total capacity of 124 mill. cu.ft. a day (102 mill.) was brought into use during the year and plant of a total capacity of 136 mill. cu.ft. (75 mill.) was scrapped and abandoned. Of the new plant 11 installations, with a total capacity of 39 mill. cu. ft. a day, were for the gasification of oil.

Less Coal Carbonised

The quantity of coal used for gas-making was 26,025,000 tons (27,668,000 tons); its price to the industry increased by an average of 7s. 1d. in July, 1957. For a large part of the year the production of coal gas was decreased and the production of water gas increased to reduce the growing stocks of coke. More gas was purchased from coke ovens and oil refineries. The quantity of oil used for gas-making was 579,000 tons, compared with 355,000 tons in 1956-57. Of total gas available 82.7% was manufactured (67.9% coal gas; 13.3% water gas; and 1.5% from other processes); 16.6% came from coke ovens and 0.7% from oil refineries, etc.

Coke production totalled 11,794,000 tons (12,643,000) and sales totalled 9,645,000 tons (10,243,000). Breeze production was 2,702,000 tons (2,813,000) and sales were 1,653,000 tons (1,712,000).

Crude coal tar made totalled 1,830,200 tons (1,920,900) and crude benzole extracted was 27,836,000 gal. (28,550,000), the reductions being due to the smaller quantity of coal carbonised. Sulphate of ammonia sales were 80,100 tons (82,700) and ammoniacal liquor sales to farmers 35 mill. gal. (20.6 mill.).

Sales of gas for domestic purposes were slightly down—1,326.3 mill. therms as opposed to 1,328.6 mill. therms in 1956-57—but gas sold for commercial uses increased by 3%, now comprising 15% of all sales, and gas sold to industry increased by over 5%, practically 30% of all sales.

Total income from gas sales was £222.8 mill. (£207.4 mill.), from coke and breeze sales £94.7 mill. (£95.4 mill.), from other products £24.5 mill. (£23.7 mill.), from sale of appliances £29.2 mill. (£27.5 mill.) and from other sources £17.4 mill. (£16.6 mill.). Total sales of gas were 2,651 mill. therms (£2,607 mill.) and the average income from gas sold was 20.17d. per therm (19.09d.).

More Gas Consumers

The total number of consumers on March 31, 1958, was 12,929,394 (12,875,987). Of these 12,180,417 were domestic consumers (12,125,748). There is a continuing tendency for domestic consumers to change from prepayment to credit meters. During the year credit consumers increased by 111,088 while prepayment consumers were fewer by 56,419.

The number of domestic gas appliances sold on hire purchase terms during 1957-58, although greater by 4.7% than the number sold in the previous year, showed the continuing effect of restrictions on hire purchase and of high rates of purchase tax. Purchase tax also affected sales of appliances for cash and the number of main appliances sold was in fact less by 2.5% than in the previous year, i.e., 461,034 in 1957-58 compared with 472,444 in 1956-57.

FINANCIAL RESULTS AT A GLANCE

		£
SURPLUS	**Scottish**	**51,102**
	Northern	**928,118**
	North Western	**532,134**
	North Eastern	**14,148**
	East Midlands	**538,653**
	West Midlands	**650,780**
	Wales	**153,811**
	Eastern	**47,028**
	North Thames	**289,980**
	South Eastern	**29,442**
DEFICIT	**Southern**	**205,155**
	South Western	**209,431**
	Total	**2,820,610**

AREA BOARD RESULTS SUMMARY

Scottish

THE Scottish Board made a surplus of £51,102 during the year. In the earlier months of the year the Board was faced with all-round increases in costs, and in an endeavour to distribute these fairly, introduced a universal tariff.

In February the Board decided to proceed with the building of Britain's first Lurgi high-pressure complete-gasification plant at Westfield in Fife. Total estimated cost of the plant and associated grid system is £8.5 mill.

The Board has also approved schemes totalling £1,166,000 for further supplies of coke-oven gas and methane drained from collieries, while a supply of natural gas was inaugurated from a well at Cousland, Midlothian.

Since vesting date £29 mill. has been expended on capital projects, and a further 16 uneconomic manufacturing stations were closed, bringing the total to 68.

Important new gas-making plant was completed and brought into operation at Provan works, Glasgow, Aberdeen, and Stirling, while reconstruction work was completed at Granton works, Edinburgh. Major repairs on retort installations were carried out at 20 undertakings. Steady progress was made in the laying of local grid mains systems.

The total number of persons in the Board's employ at the end of the year was 10,843, representing an increase of 400 or 3.8% over the previous year.

The Board's schemes for education and training were considerably developed, and last year's figure of 508 employees studying under the Board's educational facilities increased in the year under review to 660. Good progress was also made in the training of employees in first-aid.

Excellent relationships within the various area joint councils and committees were maintained, and no time was lost through trade disputes.

A new service centre was opened in Glasgow where a radio telephone system was set up to control and expedite the operation of emergency vans. New mobile workshops were acquired for use in outlying districts, while four new service centres were opened at Dumbarton, Glasgow (Pollok), Inverness and Saltcoats.

Coal used for gas making during the year was 2,248,500 tons, a reduction of 5% compared with the previous year. Against this substantially increased quanties of gas-oil were used, totalling 31,751 tons as against 19,143 tons during the previous year, an increase of 65.9%.

Coke produced amounted to 1,195,173 tons compared with 1,283,000 tons for the previous year, a decrease of 6%. Two increases in price were approved by the Ministry of Power during the year. Breeze production totalled 269,546 tons, sales in the home market showing an increase of 21%, export sales decreasing by 16%.

Tar produced totalled 179,817 tons compared with 189,784 tons for the previous year, a decrease of 5%, while ammoniacal liquor supplied to agricultural contractors during the 1957 spraying season, at 3 mill. gal., was nearly five times more than the amount supplied in the previous season.

The sale of gas for industrial purposes at 46 million therms showed an increase of 9%.

Northern

THE Northern Board made a surplus of £928,118, equal to 1.3d. per therm of gas sold. A credit balance of £314,581 is carried forward.

Gas sold amounted to 171,385,861 therms including 57,737 therms sold to the Scottish Gas Board, distributed through 5,680 miles of mains to 712,392 consumers. Total gas sales for the year increased by 2.95%. The increase was accounted for by larger demands from industrial and commercial consumers and also by the effect of severe weather on the requirements of domestic consumers.

In July, 1957, the Board, faced with greatly increased costs, had no alternative but to increase each of its then zonal published prices by 2d. per therm. The revised price schedule took effect from the meter readings taken after August 1, 1957. With effect from May 1, 1958, a single 'Published Price' based upon the general scheme of gas charges became operative without exception or variation, over the whole of the Board's area.

Sales of appliances rose to 62,537 compared with 58,426 in the previous year, an increase of 7%. For cookers alone the increase was 7.2% from 26,026 to 27,910. The value of all appliances sold was £1,333,154 as against £1,215,841 in the previous year.

Work was carried out during the year on an improved method of exchanging cookers in consumers' premises. Although still in the experimental stage the method promises to reduce costs and offer a speedier service to the consumer.

During the year 883 employees undertook courses of study or attended lectures on subjects concerning their work with the Board; 821 were allowed part-time day release for this purpose, and four employees were granted full time leave of absence to attend a university or technical college.

Coal carbonised totalled 752,139 tons compared with 852,458 tons in the previous year, while 13,866 tons of gas oil and 2,142 tons of heavy petroleum oil were consumed compared with 8,896 tons of gas oil and 412 tons of heavy oil.

Disposals of coke totalled 269,108 tons compared with 298,414 tons. Exports were 79,698 tons compared with 106,421.

Crude coal tar production totalled 48,543 tons against 53,403 tons, while 1,231 tons of sulphate of ammonia were produced and sales totalled 1,171 tons.

A CHALLENGING new two-part tariff was introduced yesterday by Mr. Crowther, Chairman of the Northern Gas Board. Its terms are as follows:

1. For users of over 29 therms: £1 per quarter, 15d. per therm.

2. Over 250 therms: £2 per quarter, 14d. per therm.

3. Over 1,500 therms: £8 per quarter, 13d. per therm.

North Western

THE North Western Gas Board reports a surplus of £532,134—equivalent to 0.36 pence per therm of gas sold. This compares with a surplus of £786,804, equivalent to 0.53 pence per therm of gas sold in 1956-57.

Only in two (the second and third) years in the nine years since vesting date has this Board failed to report a surplus.

With the balance of £511,058 brought forward and special dividends received from Benzole Producers Ltd., the disposable balance on revenue account came to £1,179,958. Of this £100,000 was placed to reserve fund, which now totals £1,200,000, £200,000 was placed to obsolescence reserve, now totalling £1,094,969 (after debiting £105,031 obsolescence from the closing of Altrincham works) and £872,958 was carried forward.

The Board carbonised 4,004,200 tons of coal during the year (against 4,089,983 tons) and gasified 14¼ mill. gal. of oil (against 10$\frac{15}{16}$ mill. gal.).

Yield of gas per ton of coal was 93.16 therms compared with 89.82 therms in the previous year, and the yield of coke per ton of coal was 8.08 cwt. compared with 8.32 cwt.

Sales of gas amounted to 353,158,000 therms, some 4½ mill. therms (1.24%) more than gas sales in the previous year. The average price realised was 18.84 pence per therm, compared with 18.02 pence per therm in the previous year.

Of the gas sold, 48% was to domestic consumers, 32½% to industrial consumers, 15½% to commercial consumers, and 4% to public authorities.

Sales to industrial consumers increased by 3.3%. Domestic sales increased by 0.32%. The average annual consumption by domestic consumers—who increased by 2,626—remained unchanged at 99 therms.

Sales of coke amounted altogether to

1,378,578 tons, which was 141,000 tons less than in 1956-57. Exports, which in the previous year had amounted to 170,000 tons, were down in the ninth year to 92,000 tons.

The report says that the public's favourable reception of the new smokeless fuel Phimax continued throughout the year, and the 28,500 tons produced were all sold.

Sales of gas appliances, at £3,534,000, were 14% up on sales for 1956-57. No fewer than 72,838 gas cookers were sold, an increase of 12,000, or 20% on the 1956-57 figure.

In the nine years since vesting date more than 950,000 domestic cookers have been sold or hired by the Board, the report states. The cash value of all appliances sold in the same period has been over £34 mill.

The report says that there was an improvement of almost 5% in productivity during the ninth year.

The Board's total income for the year was £50,231,000, against £47,560,000. It was made up as to £27,927,000, or 55.6%, from the sale of gas; £16,584,000 from the sale of coke and other products; £3,534,000 from the sale of appliances; £1,116,000 from rental of meters, appliances, and fittings; £1,027,000 from hire purchase interest and other chargeable work; and £43,000 from miscellaneous income.

East Midlands

THE East Midlands Board made a surplus of £538,653, after providing £2,115,509 for depreciation and £1,725,094 for interest charges.

More than 66,000 mill. cu.ft. of gas were made and purchased by the Board, and more than half of this was purchased in bulk from coke ovens and purified for re-sale; 1,593,166 tons of coal and approaching 6 mill. gal. of oil were used in manufacturing gas.

More than 1,207,000 customers were being supplied at the end of the year —an increase of 13,580 over the previous year—while gas sales increased by 2.68% over the previous year.

The Board sold and hired 53,893 cookers, 13,432 space heaters, 12,983 water heaters, 21,084 washboilers and washing machines and 1,743 refrigerators during the year.

The Board has decided that the production of gas, the reception of bought gas and the bulk distribution of gas should be placed under the direct control of a Chief Engineer and Production Controller with operational headquarters at Litchurch works, Derby.

Good progress was made in the reorganisation of stores and purchasing, and the statistical section and the method of collection and collation of statistics was also reorganised, responsibility for statistics being transferred from the Commercial Manager to the Chief Accountant.

Total gas made was less than during the previous year and more coke oven gas was purchased. Production results showed no significant alteration. The yield of gas was slightly lower at 73.7 therms and of coke and breeze slightly higher at 11.5 cwt. per ton of coal carbonised.

The Litchurch works, Derby, were opened and construction of the two catalytic oil gas plants at Meadow Hall works, Sheffield, was completed and the first unit came into production during the year. Two smaller plants at Northampton were also commissioned during the year.

Seven works were closed down during the year and the number of works closed down since vesting date is 70 out of an original total of 104.

The North Lincolnshire grid came into full operation, and the branch main from the grid to Winterton and Barton-upon-Humber, and the main between Leicester and Lutterworth was completed.

The programmes for the replacement of mains and services were accelerated as the result of the adoption of the more sensitive types of leakage indicator.

The number employed at the end of the year was 10,692 compared with 10,867 on April 1, 1957. This is the fifth successive year in which there has been a reduction in the number employed. There was an overall decrease of approximately 2½% in the number of operatives employed. No stoppages of work for industrial disputes occurred.

At March 31, 1958, there were 686 employees studying under the Board's Education Scheme. The Board made use of the sandwich and post-higher national certificate courses at the Birmingham College of Technology.

New prices were announced in August, 1957, and in order to promote the consumption of gas, an optional two-part domestic tariff was introduced.

The number of consumers increased by 13,580, while sales to commercial consumers were higher by 8.6% and industrial sales continued to expand, being 4.6% greater than in 1956-57.

Coal carbonised during the year amounted to 1,593,166 tons, and a further 7,562 tons were used for other purposes, mainly steam raising. In the Board's carburetted water gas plants 5,730,398 gal. of gas oil were used and 305,421 gal. were used for other purposes, mainly in benzole recovery plants and for naphthalene removal; also 1,183,892 gal. of medium fuel oil were used in new catalytic oil gasification plants.

Total coke sales amounted to 643,990 tons, an increase of 1%, but exports at 38,620 tons were 6,452 tons down.

Tar production showed a reduction of 3.8%. Crude benzole production at 584,870 gal. showed an increase of 160%; while ammonia products sales increased very substantially.

West Midlands

THE net surplus of the West Midlands Gas Board was £650,780, as against the previous year's surplus of £450,399, enabling the Board to make additional provision for self-financing.

The average income per therm of gas sold rose from 17.45d. to 18.49d., an increase of 1.04d. per therm. This reflected the effect of the revised gas tariffs introduced as from September 30, 1957.

Total revenue income increased by £2,200,000 to £40,751,000. Capital expenditure during the year amounted to £4,493,841, of which £2,519,593 was provided from depreciation and disposals.

Gas sales at 324 mill. therms were 2.4% higher than the previous year. Sales to industry rose to 51.6% of the total. Consumers increased by 10,226 to 1,123,963. Sales of gas appliances increased by 6.8% to £2,369,555.

Sales of coke fell by 5.8% to 1,049,530 tons. There has been a steady improvement each year in the yield of coal gas in therms per ton of coal, and this year the figure reached 82.4 therms per ton compared with the figure of 77.9 in 1949-50. This increased yield represents a gross saving during 1957-58 compared with 1949-50 of 180,000 tons of coal at a cost of more than £1 mill.

New plant completed during the year increased the daily gas-making capacity by 10,810,000 cu.ft. after allowing for plant closed down and scrapped.

The erection near Birmingham of the urgently needed large Lurgi complete gasification plant to consume low-grade coal from the Midlands coalfields was still held up owing to the dispute over planning permission. An early decision is now of vital importance as gas-making capacity in the industrial central area is being rapidly absorbed.

Central control of the production, distribution and storage of gas was established for the industrial area around Birmingham, Coventry and the Black Country.

The Board was compelled to raise gas prices from September 30, 1957, to meet in part net increased costs amounting to £2,868,000 per annum since the previous tariff revision 12 months earlier.

North Eastern

THE North Eastern Board accounts show a surplus of £14,148 for the year. The Board transferred £50,000 to the reserve fund and carried forward £384,297. The Board borrowed £560,000 through the Gas Council and provided £1.5 mill. from its own resources to meet capital expenditure.

To meet rising operational costs and to undertake a measure of self financing, new tariffs were fixed and included an optional two-part domestic tariff.

Gas sold amounted to 146,573,359 therms, giving an income of £12,010,075; sales of by-products yielded £6,288,909 and appliances £1,516,611. The average price per therm was 19.66d.

The number of consumers fell by 1,780 to a total 861,612. The number of employees was 8,076, 72 less than the previous year. The fuel expenditure index was reduced with a weighted average of 17.1 as against 17.4 last year.

A total of 30 stations have ceased to

manufacture gas since vesting date, May 1, 1949.

The grid system has been extended from Leeds to York, while carburetted water gas plants at Leeds and Bradford are being converted to use light petroleum distillate thereby lowering production costs and improving gas quality.

The rate of renewal of mains is being accelerated and terms for the provision of mains and services to new houses were made more flexible. The further centralisation of accounting records is proceeding.

Operational efficiency reduced manpower, while salary and wage increases represented an additional annual cost of £90,000. Approval was given to a pension scheme for manual workers.

More than 420 employees attended courses at local technical colleges, while 814 employees attended various lectures and courses.

Gas manufacturing plants with a capacity of 4.62 mill. cu.ft. per day were closed down, while additional gas is to be made available from coke ovens at Glasshoughton and New Monckton. Coal costs increased at the rate of £650,000 a year.

More than 150 miles of main were laid or relaid at a cost of £703,482. Supplies of gas to districts have been improved where deficiency of pressure was ascertained.

Gas sales to consumers at 143,549,954 therms were 0.92% higher than last year. Appliances sales at £1,516,611 were 15.4% higher than last year, and the sale of gas-fired warm air furnaces has grown steadily.

Inland sales of coke and breeze were better than the previous year by 1.6%, while the scheme of summer/winter prices was well received by consumers. The Continental market for coke and breeze was weaker than last year.

Eastern

THE Eastern Gas Board reports a surplus of £33,809 after taking credit for a special distribution of £253,781 from Benzole Producers, Ltd., and after providing £1,376,218 for depreciation, £1,274,399 for interest, £200,000 for obsolescence and transferring £50,000 to the General Reserve fund.

A central billing office, using electronic accounting equipment, began to function on October 1, 1958.

Sales of gas to the five new towns in the Board's area increased by more than 30% over 1956-57. In four of these towns (Harlow, Hemel Hempsted, Stevenage and Welwyn Garden City), the population has now passed the 25,000 mark.

The Board installed gas-making plant capable of producing 9 mill. cu.ft. of gas per day and shut down gas-making plant of nearly half that capacity.

Seven gasworks were closed down during the year and bulk supplies were afforded from other works. A new continuous vertical carbonising plant at Cambridge, with a capacity of 3 mill. cu.ft. of gas per day, was brought into operation.

Plant for complete gasification of low-grade coal is now operating at Watford, and a catalytic oil gasification plant is in operation at Ponders End (Middlesex). A small oil gasification plant was put to work at Thetford (Norfolk) and all gas manufactured and distributed from that station is now made solely from oil; in this respect the works is unique in this country.

Gas made (measured before benzole extraction) increased by 2.5% over the year 1956-57 and represents the record annual total since vesting date.

Sales of coke (752,260 tons) were slightly above the level for the previous year. Sales of gas to the public increased 2.2%. Consumers increased by 12,503.

Domestic appliances sold during the year totalled 108,459, an increase of 474 over the previous year.

During the year £4,449,258 was spent on capital development.

North Thames

THE North Thames Gas Board made a surplus of £289,980 on the year's working. To this sum were brought in a special distribution (£1,211,778) arising from the sale of National Benzole Co., Ltd., in which the Board had held an interest, adjustments relating to prior years (Dr.£15,912) and the balance brought forward from last year (£313,182) making a total of £1,799,028.

Of this sum the Board allocated £350,000, to the reserve fund, £700,000 to the replacement and obsolescence reserve, and made a contribution towards pension-fund deficiencies of £380,000, leaving a balance of £369,028 to be carried forward.

During the year the Board invested a further £9.4 mill. in fixed assets (less disposals). Largest single job was the refinery-gas reforming plant at Romford and associated pipeline upon which £1,541,000 was spent during the year, making a total of £1,652,000 to date.

Gas sold to domestic consumers during the year totalled 212,965,000 therms [a drop of 1,986,000 therms on the previous year's total]; industrial, commercial, public lighting and administration sales totalled 178,235,000 therms [an advance of 3,884,000 therms on last year).

The price of gas was raised by 2d. a therm in August, 1957.

Sales of coke (including Cleanglow) totalled 1,600,606 tons. Over the year production of coke for sale to the public was reduced by 16% but the Board's stock nevertheless increased during the same period by 170,000 tons. A substantial rise in coke stocks occurred throughout the country but the North Thames position was aggravated by falling demand at steelworks, which displaced the Board's coke after ten years' continuous supply and by the fact that the Scandinavian market was also well stocked.

In comparison with the previous year sales of cookers, convector gas fires, refrigerators and home laundry appliances increased.

During the year 27,962 new dwellings were occupied in the area; gas cookers continued to be chosen by four out of five housewives and the popularity of coke grates with integral gas ignition was maintained.

South Eastern

THE South Eastern Board made a surplus of £29,442. Sales of gas increased by 1.83%, but sales of coke dropped by 2.6%. The number of consumers rose by 10,718 to 1,574,466.

Rising costs compelled a change in the Board's prices which had remained stable since August, 1955. The flat rate price of gas was raised by 2d. a therm on August 12, 1957, over most of the Board's area, though in certain districts the increase was limited to 1d. There are now only two prices in force in the Board's area—an inner price for London and certain neighbouring districts (24d. per therm) and an outer price for the rest of the area (25d. per therm).

The scope of the domestic two-part tariff was extended to bring cheaper gas within the reach of more consumers and a new special domestic tariff (large users) was introduced under which gas is supplied for 15d. or 16d. per therm (according to the district of supply) on payment of a standing charge of 39s. a quarter.

Sales of gas refrigerators, which rose sharply during a spell of hot weather in June, continued at a higher level with the introduction of the 'Gascold' which sells at a very attractive price and has been an immediate success.

Coal prices were raised from July 1, 1957, and the estimated increase in cost to the Board is £1,361,000 in a full year.

With the construction of more oil-using plants, less coal and more oil were used than in the previous year (3,614,235 tons of coal compared with 3,799,558; 17,889,326 gal. of oil compared with 11,795,159). Total gas made during the year was 305,519,985 therms.

More progress was made in centralising gas production. Gas making was discontinued at Vauxhall, Gravesend, Guildford, Walton, Ashford, Faversham and Herne Bay gasworks. Of the 67 gasworks taken over by the Board, 35 have now been closed down.

During the year, 181 miles of new gas mains were laid, bringing the total in the South Eastern area to 10,465. New services to consumers numbered 27,049 and about 20,352 services were relaid.

After two mild winters supplies of coke, as of most solid fuels, have exceeded demands. Total sales of coke amounted to 1,516,398 tons, a decrease of 2.6% on the previous year. Over 100,000 tons went for export to Scandinavian countries.

A record quantity of tar—137,752 tons—was distilled at the Board's tar works at Ordnance Wharf, E. Greenwich, and

25,986 tons of sulphate of ammonia were made.

The number of persons employed fell from 21,704 at March 31, 1950, to 19,098 at the end of the year under review. The total paid in wages and salaries was £12,251,920 compared with £11,846,087 the previous year.

South Western

THE South Western Board had a deficit of £209,431 against a surplus of £13,008 in the previous year. To offset this reserves and accumulated previous years' surpluses have been applied, leaving a balance of £4,779 to be carried forward.

Coal carbonised totalled 1,365,999 tons, against 1,512,945 tons in the previous year. Oil used for carburetted water gas totalled 5,426,595 gal., against 2,664,904; while oil used for other gas-making purposes amounted to 3,571,214 gal. against 2,415,244 gal. Total gas available was 125,130,506 therms against 125,410,558 therms.

Domestic sales of gas per consumer for the year revealed an upward trend for the first time in three years and exceeded those for 1956-57. The total value of the appliances supplied to consumers in the year to March 31, 1958, was £1,371,700 compared with £1,467,316 in the previous year. Sales of refrigerators, fires and water heaters show marked increases, those of cookers little change, while the number of wash boilers supplied dropped slightly.

Since vesting date there has been an increase of 49,309 in the total number of consumers.

Despite increasing competition for both industrial and commercial loads, the demand for gas for these purposes continues to grow. The industrial showroom and development centre at Bristol is nearing completion and is being equipped with the latest industrial equipment. The Board's industrial efficiency testing service continues to be in great demand and indications are that it will lead to the development of a very high standard of efficiency in the gas-fired equipment used in the Board's area.

Coke sales for the year at 541,576 tons were 70,000 tons (11.4%) lower than for the previous year, having dropped in the home market by 32,000 tons and in the export market by 38,000 tons.

Working under revised co-operative agreements, 20,674,604 gal. of tar produced in the year under review realised 7.81d. per gal. compared with 7.42d. per gal. for 20,703,449 gal. in the previous year.

The gallonge of benzole sold in 1957-58 was 626,829 compared with 891,188 in 1956-57, the net deficit to the Board being 2.20d. per gal. compared with a surplus of 1.02d. in the previous year.

The demand for ammoniacal liquor as a fertiliser continued to grow.

Southern

THE Southern Gas Board reports a deficit of £205,155 on the year's working. After taking into account a special distribution of dividend from Benzole Producers, Ltd. (£96,273, of which £43,890 was a capital dividend), a transfer from reserve for future taxaton (£70,000) and the balance brought forward (£91,379) there was available £52,497. Of this sum £43,890 has been transferred to the reserve for replacement and obsolescence, leaving a balance of £8,607 to be carried forward to next year's accounts.

The re-organisation started towards the end of 1956 was practically completed. By the end of the year the pattern of the new administration was complete except for the clerical function. Details in respect of this are being settled during the current year.

Gas made during the year totalled 123,921,000 therms, an increase of 823,500 therms, or 0.67% on the previous year; 72% was coal gas, 17.5% carburetted water gas and 10.5% refinery gas and gas produced from catalytic oil gas plants.

Total sales of gas for the year were 114,454,616 therms, an increase of 556,664 therms, or just under 0.5%, on the previous year. Sales to industrial consumers increased by 4.2%; domestic sales were about 0.3% below the previous year.

As at March 31, 1958, the number of consumers was 621,391, an increase of 7,655 or 1.2% on the previous year. The average annual consumption of gas per consumer fell from 179 to 178 therms.

Total number of appliances sold was 71,144, a reduction of 0.7% on the previous year. Sales of cookers, washboilers and refrigerators increased, together with sales of industrial and canteen appliances, but decreases were recorded in the sales of gas space heaters, coke space heaters, water heaters and washing machines. New houses and flats carcassed for gas during the year totalled 11,381 representing 96% of all dwellings completed for which gas was available. Meters were fixed in 93% and cookers in 86% of these premises.

Due to the reduced tonnage of coal carbonised following the intake of refinery gas, production of coke available for sale totalled 431,000 tons, compared with 523,800 tons in 1956-57. Total sales (the Board's own coke and coke imported from other boards) were 531,500 tons compared with 551,600 in the previous year. Stocks at gasworks had fallen at the end of the year to 24,000 tons from the comparatively high figure of 50,100 tons at the beginning of the year.

Coal carbonised during the year totalled 1,189,542 tons, 164,812 tons or 12.2% less than in the previous year, mainly due to the use of refinery gas. Since vesting day there has been an average improvement of 0.7 therms per ton per annum in the average yield, representing a total saving of over 600,000 tons of coal in nine years. Imported coal represented 8% of the total received.

Capital expenditure during the year was £4,074,000, 27% of this being furnished from internal resources. Additions to fixed assets since nationalisation total £21,764,000.

Gas prices were increased by 0.9d. per therm as from August 5, 1957.

Wales

THE Wales Gas Board's surplus was £155,846 — gross revenue being £9,953,000. From the surplus £100,000 was set aside for replacement and obsolescence reserve and £50,000 to reserve fund. There remains at the end of the year an addition to carry forward of £5,846 which increases this figure from £254,835 at March 31, 1957, to £260,681 at March 31, 1958.

Gas sent out totalled 102.48 mill. therms, 8.5% more than in the previous year. The Board sold 90,857,717 therms of gas against 83,747,553 therms in the previous year—an increase of 8.5%. The number of consumers increased from 474,288 to 479,949. Domestic consumers bought 43,206,171 therms, an increase of 2%, the average sale per domestic consumer rising from 95.4 to 96.1 therms. A large proportion have taken advantage of the lower cost of gas which the optional domestic two-part tariff provides. The tariff has now been adopted by 30% of all consumers taking 45% of the Board's total domestic sales.

The Board authorised the laying of mains and services on new housing estates comprising 7,578 houses at an estimated cost of £213,542. Schemes for the supply of gas to 1,710 existing houses at an estimated cost of £57,822 were authorised.

Sales of gas to commercial consumers increased by 9.5% from 14,637,661 to 16,035,157 therms.

Sales of gas to industrial consumers increased by 21.4% from 23,330,990 to 28,334,958 therms. This equals 31.2% of the total gas sold. It is noteworthy that this increase was distributed fairly evenly throughout the area.

The sale of appliances increased from £988,037 to £1,104,916 equivalent to £230 worth of appliances per 100 consumers.

The supply of methane from Bersham colliery to the Maelor gasworks of the Wrexham undertaking began in December, 1957. It has averaged 2.8 mill. cu.ft. of gas (town gas equivalent) per week. In South Wales the construction of the Afon Valley methane grid was completed. Supplies were received from the Duffryn Rhondda and Avon collieries totalling 6.3 mill. cu.ft. (town gas equivalent) per week. The grid connection to Glyncorrwg colliery was completed shortly after the end of the year.

The price of gas was increased by approximately 1½d. a therm in July, 1957.

I.G.U. ROME—
'Gas Journal' Abstract

SESSION 2 A

Review of Technical Sessions

Continued from October 8, page 80

IGU/18-58 Coke for Central Heating in Automatic Boilers.
Report by the Swiss Association.

IGU/8-58 Measures to be taken in Gas Works and Coking Plants against Pollution of the Atmosphere.
Report by the French Association.

IGU/31-58 Tariff Techniques at the Service of the Expansion of the Gas Industry.
Paper by G. Robert, Directeur Commercial du Gaz de France and A. de Saint-Vincent, Directeur-Général, Cie. Française du Méthane.

IGU/27-58 Co-ordinated Industry Promotion and Advertising.
Paper by Chester S. Stackpole, Managing Director, American Gas Association.

IGU/44-58 Consumption Statistics per Consumer and per Appliance—Recording Methods.
Paper by Dott. Ing. Arrigo Böhm, Consultant Director, Societa Italiana per il Gas.

AUTOMATIC COKE BOILERS

The Swiss Association was given the task of investigating the extent to which automatically operated coke fired central heating boilers have been installed in member countries. This was considered of importance because of the adverse effect on the gas industry of the increase in oil fired central heating systems.

A questionnaire containing the following main headings was sent to each member country: (1) Automatic system employed; (2) heat output of the boilers installed; (3) size of the coke used; (4) system of heating—i.e., hot water or low pressure steam; (5) number of boilers installed; (6) any special experience from their use; and (7) likely future developments with possible improvements in boiler design.

Answers were received from all Western European member countries, the United States, and Japan. Neither Italy nor Spain had any knowledge of such boilers being installed in their countries and the United States replied that the number of such installations there was too small to be of any importance.

The report went on to describe what form the automatic equipment should take since some members had stated that the equipment in use in their countries could not be considered automatic in the sense implied in the questionnaire. The report carefully analysed the problems which must be overcome if the coke fired boiler is going to be able to compete with the automatically controlled oil central heating system. The fully automatic boiler may not be possible for the average domestic household, because of the expense; but even so, the gain from increased fuel efficiency, the fuel saving from slow running at night or in warm spells should be taken into account. The placing of the fuel hoppers to allow easy charging and increased ash discharging facilities are of importance in reducing work to be done by hand. In large installations in offices and schools, not used throughout the 24 hours, such points are of great importance.

The report includes a number of sectional drawings of suitable coke boilers of various sizes which give some indication how some of the stoking problems are being met.

All the information received in the answers to the questionnaire has been conveniently set out in tables showing the types of boiler in use, their efficiencies and heat capacities, and in which country each type is to be found.

AIR POLLUTION BY GAS WORKS, &c.

The Association Technique de l'Industrie du Gaz en France was entrusted with the task of investigating the measures being taken in member countries against atmospheric pollution by dust, smoke, etc., at gas works and coke oven plants. Its report attempts to co-ordinate all the information received and to put it into the proper perspective of the general struggle against atmospheric pollution. The sources of pollution are dealt with and its exact definitions, laid down by the International Body, are quoted.

The questionnaire sent to member countries is divided into two sections. The first concerns the legislation to limit atmospheric pollution in force in each country and the second deals with its origin, the methods being applied to reduce dust concentration and to combat the ill effects of dust and toxic gases. This second part of the questionnaire was also sent to a number of gas works and coke oven plants in France and to the gas and electricity authorities in Algeria.

Among these coke oven plants were those owned by the mining and metallurgical industries as well as the gas industry.

In addition to tabulating all the information received in full appendices—the replies from the French and

Algerian undertakings are separately appended—the report fully analyses the conditions in each member country.

DISCUSSION

Dr. A. E. HAFFNER (G.B.) described the situation as regulated by legislation in the United Kingdom and the control exercised by the Alkali Inspector. It was a case of useful collaboration.

Dr. JAMES BURNS (G.B.) said there was no doubt that everyone was becoming more pollution minded. The liaison with the Alkali Inspector was a happy one. Coke ovens had been a fruitful source of pollution, but there had been great improvements from that point of view in charging methods, and dry cooling plant for the coke made a further contribution. Horizontal retort houses were perhaps the worst offenders; and if they could not be effectively dealt with perhaps they ought to go. The moving about of coke gave rise to much dust and there remained a lot to be done to secure a happy medium between wet coke and excessive dust.

CONSUMER TARIFFS WITH NATURAL GAS

The discovery and development of the natural gas reserves at Lacq in south-western France have considerably changed the outlook of the French gas industry. They have made it necessary to reconsider the commercial side of the industry with the possibility of a radical change in the tariff structure of gas prices.

In this paper by MM. G. Robert, Commercial Director of Gaz de France, and A. de Saint-Vincent, Director General of the Compagnie Française du Méthane, the basic issues for the construction of a suitable tariff are discussed. The authors show in detail how the costs of production and transportation can be incorporated in a tariff system, by dividing the price charged under two main heads, a fixed charge or 'souscription' which is a function of the nominal daily outflow of gas from the works, and a charge for gas as delivered, or 'livraison,' which is a function of the actual volume sent out. The cost of distribution to consumers, they point out, is more complex and a statistical survey of the various types of consumer is necessary. The whole subject is further complicated by the need to meet development costs for the full exploitation of the reserves, which is likely to be spread over a number of years. This can be taken into account as the expansion of demand keeps pace with extension of the gas transport system and greater gas availability. The paper goes on to discuss the mechanism of tariff structures especially as applied to France where gas tariffs come under the control of the Ministry of Industry and Commerce. Details are given about invoicing, metering methods and conditions governing thermal pricing.

CO-ORDINATED PROMOTION

Undoubtedly advertising has been brought to a greater pitch of perfection in America than elsewhere, and Mr. Chester S. Stackpole's contribution shows how centralised promotional advertising on a large scale can benefit the gas industry.

Under the PAR plan, where P stands for promotion, A for advertising and R for research, these three major activities have been co-ordinated under the central leadership of the American Gas Association. Through PAR a public information programme has been initiated by which nation-wide support is provided for individual gas companies. The A.G.A. with the assured support of some 2¼ million viewers became the sponsor of 'Playhouse 90,' a television programme transmitted by about 130 stations. To make certain that this programme was going to be a success, four points had to be considered. The first was the choice of the right vehicle, the second was to be certain of getting the right message across, the third was how to say it most effectively and the fourth was to find the most suitable form of 'follow through' to meet the public interest aroused by the programme.

The success of the programme showed that the right vehicle had been found. The choice of message was the result of much study and research, and the putting-over of this message was solved by the choice of a young woman, Miss Julia Meade, of suitable personality to conduct the programme. The follow-up was effectively done by the issue of publicity material of similar contents to the television programme and the public appearance of Miss Meade at many conventions and meetings to help sell the story of gas. The programme at $600 a second is not expensive if the coverage is considered; in fact it works out at less than 1c. a viewer. This is specially true when companies had spent $2½ mill. on local programmes.

To ensure success of advertising programmes, a great deal of far-sighted planning is necessary. This is done a year ahead by a qualified committee of gas industry sales executives. Its decisions are incorporated in the 'plan promotion book' which is sent to the entire gas industry in the preceeding September.

The vital importance of glamour in selling is appreciated by A.G.A. It is of little use trying to sell strong sturdy kitchen and laundry appliances if they have no visual appeal. Advertisements of beautiful gas kitchens and laundries appear in many leading magazines which women read and believe in. A branch of A.G.A. in Hollywood sees that when household appliances are needed in films, the most modern and finest gas appliances are displayed.

Other campaigns such as the annual Mrs. America

By Lake Gandolfo. Miss Edwards, Dr. Edwards, Mrs. Andrew, Mrs. Barnett and Mrs. Pearson

competition are well known in bringing the gas industry to the ordinary housewife.

DISCUSSION

Mr. STACKPOLE, introducing his paper, drew the biggest smiles and loudest applause so far in the conference room by what he termed his Americanised Italian and French greetings to all present.

He went on to recall that the great promoter, Karl Sorby, had said in New York three years ago that for all the pipelines and the manufacture of gas 'nothing happened until there was a sale.'

T.V. Tilted the Curve

In 1944 they were spending $1 mill. on promotion; in 1958 $8 mill. At one time there was a downward trend in sales; and it was TV that turned the curve upwards. There was even a resurgence in gas lighting, started by a 'little lady in Texas' who wanted a gas standard to decorate her premises. Now a firm was turning out 1,200 lamps a day which found a ready sale for the outside decoration of clubs, airports and gardens.

In U.S. they had a high-level Gas Industry Development Committee—their 'watchdog'—which when necessary said to the industry 'Do it now, today.'

Mr. FRANK SMITH (U.S.), President of the Houston (Texas) Gas Company which owns a pipeline as well as the distribution and sales network, testified to the tremendous effect of co-ordinated research, advertising and promotion. He confessed. however, that the industry had not been in such good condition, not very live, until the advent of natural gas. Now the gas industry was the fifth largest in the States in capital investment—due not only to advertising but to the fine product they had to sell.

Dr. R. S. EDWARDS (G.B.) commented on the similarity of the sales organisation in U.K. and U.S., and on the fact that when figures were brought to a proper basis of comparison U.K. did not lag far behind in its expenditure on publicity.

Dynamic Leadership

Mr. H. R. HART (G.B.) said money and dollars meant a lot, but something else was needed—dynamic leadership. It was abundantly clear, from the present session, that the U.S. had it.

Dr. JAMES BURNS (G.B.) claimed that in the U.K. there was a tremendous outstanding market for space heating in winter. Why shouldn't others follow the American example and take on, perhaps, Marilyn Monroe rather than risk the loss of another market?

Delegates from Germany, France, Sweden and Switzerland also took part in the discussion.

Chester S. Stackpole, Managing Director of the A.G.A., missed nothing of the discussion on his paper.

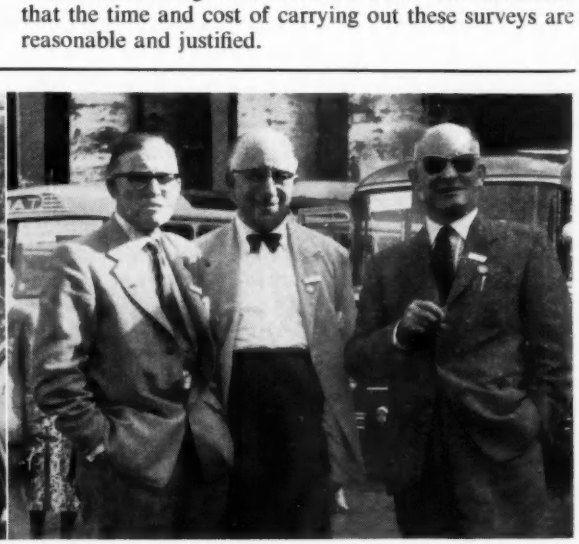
Mr. STACKPOLE added that in the States 18 mill. houses were heated by gas. On the other hand, in Chicago 100,000 houses were waiting for a supply, so great was the demand. He also mentioned how highly developed were their public and press relations.

STATISTICS FROM THE DISTRICT

The drawing-up of any form of price tariff must rely on accurate statistical information being collected from the district served by the gas undertaking. Dr. Böhm, Chief Consultant at the headquarters of the nationalised Italian gas industry, shows that this can be conveniently done by means of perforated cards, one for each consumer. On these cards are entered the particulars of the type of consumer, the type of appliances in use at the consumer's premises, the gas consumed over the period under survey, the capacity of the meter and other information relating to the accounting system of the undertaking.

In this way reliable information can be arrived at for measuring the effect of changing the limits of block tariff rates on promoting additional gas consumption by any class of consumer. A survey of the types of appliance can be made and sales campaigns planned accordingly. The author gives sample calculations from tables made from such a survey and interesting curves illustrating certain tendencies. He concludes that the time and cost of carrying out these surveys are reasonable and justified.

Hon. Sec. I.G.E.; H. Johnston; President I.G.E.



Messrs. Bernard Clarke, George Currier, C. C. Wood

I.G.U. ROME—
'Gas Journal' Abstract

SESSION 2 B

IGU/2-58 Harmonising Essential Clauses in the Specifications for Stamping Appliances.
Report by the International Committee.

IGU/22-58 Importance of the Natural Gas Industry and the Use of Natural Gas in Austria.
Paper by Dipl. Ing. Erich Klement, Fachverband der Gaswerke Osterreichs, Austria.

IGU/30-58 Methods and Processes of Analogical Calculation of Gas Transmission and Distribution Systems.
Paper by A. Renauldon, Adjoint au Directeur des Etudes et Techniques Nouvelles, Gaz de France.

IGU/38-58 Rôle of Scientific Research in the Evolution of the Town Gas Industry.
Paper by Prof. G. Malquori, Istituto di Chimica Industriale, Naples, Italy.

IGU/23-58 Observations on the Corrosion of Buried Pipes.
Paper by R. de Brouwer, Directeur Technique, 'Distrigaz,' Belgium.

STAMPING GAS APPLIANCES

THE lengthy and detailed Report of the International Committee for the Harmonisation of Essential Clauses in the Specifications for the Stamping of Gas Appliances—in effect, a comparison of codes of good practice in the design of gas appliances—is not out of proportion to the importance of the subject. It is a continuation of the work reported in New York in 1954-55. Since then regulations have come into force in countries where they were in the planning stage three years ago, and some existing regulations have been modified or extended.

Our own technicians, Mr. Andrew and Mr. Dunning, submit a very full comparison of the standards in the construction of domestic cooking appliances in the several countries of the Union. This shows numerous modifications of previous practice; but in general these are changes in detail rather than in fundamentals.

The use of gas-heated washing machines in the home is of recent development. Quite often they incorporate electrically operated moving parts, but competition with the all-electric machine is severe. Prof. Schuster, Germany, reports briefly, concluding with the announcement that the Committee propose to establish a scheme for international recommendations for standardisation, and the same applies to refrigerators. The same author also contributes a study of regulations governing flexible connecting tubes for the appliances, with a promise of similar future work.

Other reports relate to appliances for the use of gases other than classic town gas (coal and water gas)—natural gas, propane, propane-air, butane, liquid petroleum gas, etc. Mr. Poschmann (Austria) reports on regulations governing the design and positioning of storage vessels ('bottled gas') for liquefied gases in domestic and similar premises.

It is remarked that manufacturers have taken a lively interest in these matters and, in particular, that the European Committee of Manufacturers of Heating and Domestic Cooking Appliances have been invited to attend meetings of the committee and that it is anticipated that the invitation will be accepted.

DISCUSSION

M. J. KEC (France) introduced the report and said that it had been brought up-to-date with the British Standards. The points made in the paper covered:—1. Flexible connections. 2. Technical requirements for washing machines. 3. Refrigerators. 4. Apparatus suitable for use with different gases. He thought action should be taken to standardise apparatus for use with L.P. gas.

Mr. TINBERGEN (Holland) asked what were the test pressures in G.B. He then made the point that as the use of natural gas was relatively new it might be easier to introduce standards for appliances designed for natural gas rather than those designed for manufactured gas. He thought the position had been reached when there would be a specification for flexible connections for cookers.

Mr. L. W. ANDREW (G.B.) replied that there were three test pressures in Great Britain:—1. A maintained pressure of 3 in. w.g. during performance tests. 2. A soundness test at 100 in. w.g. for individual components. 3. A soundness test of the complete assembly at 12 in. w.g. He

Mr. and Mrs. Chester S. Stackpole with (right) Mr. Sydney Smith and Mr. H. R. Hart of the Scottish Gas Board.

announced that approval stamping of appliances in Great Britain would start on September 30.

M. LIHRMANN (France) said that the specifications for apparatus using natural gas were not yet available.

MR. DE VOOGD (Holland) said he was interested to see that the specifications covered flexible connections as well as appliances because, although there were fortunately few accidents in the Netherlands, 50% were due to flexible connections. He questioned whether there was overlapping in the work of the I.G.U. Committee dealing with Safety and the Stamping Committee. In the Netherlands they thought that the ozone which might be formed by domestic electrical appliances, such as vacuum cleaners, adversely affected the rubber in flexible tubing.

M. A. RENAULDON (France) said that work had already been done in France on rubber flexible tubing, but its use was being replaced by plastic tubes and this would require further study.

Prof. SCHUSTER (Germany) said there was great competition between rubber and plastics for tubing, and the subject required study by the Safety Committee.

M. KEC in his reply stated that the Safety Committee dealt mainly with questions of principle whereas the Stamping Committee drew up specifications to implement the recommendations of the Safety Committee.

NATURAL GAS LIMITED IN AUSTRIA

Natural gas accounts for 6.7% of Austria's indigenous primary energy supply and for 4.4% of her total consumption of energy. Fortunately the most important known deposits are in the region north-west of Vienna. Other deposits are known in Lower Austria and Styria (both important to Austrian economy). It is unlikely that distribution of natural gas will be possible outside these three geographical limits. Under the Treaty of 1955, these resources are freely available to Austrian economy.

DISCUSSION

M. ROBERT (France) said he was especially interested because of the similarity between the reserves and consumption of natural gas in Austria and in France. He sought information regarding the conversion from manufactured gas to natural gas in the smaller cities. He thought that the position in Paris would be similar to that in Vienna and that the use of some manufactured gas would be retained. He asked for information about the Austrian sales policy.

Mr. D. TINBERGEN (Holland) asked:—1. Why, with natural gas available, the conversion of gas supplied by public utilities was only partial and natural gas was being used for other purposes such as electricity generation? 2. What provisions had been made for storage? 3. As Vienna was fortunately near the gas fields and was therefore a very suitable market, why was manufactured gas to be continued?

Mr. E. KLEMENT (Austria) replied:—1. Each of the provinces of Austria received its quota of natural gas and each of them could decide upon its use. It should be remembered that hydro-electric power was available in Austria. He agreed that natural gas was not always economic for firing boilers. 2. The distribution of natural gas in Austria was still relatively new and storage had not yet become a problem. 3. The gas supplied in Vienna was 70% derived from natural gas; there was an obligation to purchase coal and supply coke. It was expected that natural gas would be more extensively used but a supply of natural gas was foreseen for only 20 years and therefore they did not wish to abandon manufacturing plant.

CALCULATING TRANSMISSION SYSTEMS

M. Renauldon discusses the use of analogical methods and processes in the calculation of pipe lines for the transmission and distribution of gas. The mathematics of these problems is extremely complicated even when assisted by the electronic computer. 'The principle of analogical computing of a network consists in the substitution of another physical system, satisfying identical mathematical equations, or at least similar ones if they can lead to the same solutions.' In other words, a scale model is made of the system or an analogous model using air ('presenting some difficulties in its implementation'), hydraulic analogues ('producing universal and simple results based on heavy and rather costly apparatus'), or electrical analogues which hitherto 'have only been applied to steady-flow mesh networks' but which could be 'extended to the general case of variable flow studies.' Appended to the paper are mathematical studies of several of these techniques.

DISCUSSION

Mr. T. A. LUCAS (G.B.) said that equipment was required which was capable of acting quickly enough for an operator to apply the results in day-to-day control of an actual gas supply system. For this, mechanical aids appeared essential. He would like to have M. Renauldon's opinion on the relative merits of electric non-linear analogues or pneumatic analogues, which he thought preferable.

M. RENAULDON in his reply said that at the College of Gas Technology he believed the analogue computer had been replaced by a digital computer which was capable of solving other problems also. As regards ceramic resistors he was glad to hear Mr. Lucas's suggestion on the possibility of their use. He considered the McIlroy Computer the best, but there were difficulties in importing it into and maintaining it in France. He had used his computer successfully to solve problems in connection with the study of the supply of gas to Paris.

TRENDS OF RESEARCH INTO GAS MAKING

The problems presented to research workers of the gas industry are fundamentally similar throughout the I.G.U. member countries of Europe. Prof. Malquori's paper covers those arising out of 'developments in manufactured gas production—from the carbonisation of lower-priced coals to the utilisation of low-rank material; high-pressure gasification; the use of different petroleum products; hydrogenation and so on.'

The rising price of coal following a manifest shortage of classic coking and gas coal is a cause of perplexity and anxiety in the gas industry of Europe. At the same time it is probable that coal will, for a long time, retain its place as the premier basic material for the production of manufactured gas. It is even possible that its stability will be increased and extended by the techniques now turning towards the use of coals of inferior quality and low price, either in the direction of blending or that of complete gasification.

In relation to blending the importance of continued research into the constitution of coals and their behaviour in coking is stressed. Prof. Malquori rapidly surveys the techniques in use. He concludes, however, that the results so far attained. 'in spite of the high level to

which eminent savants have taken research in this sector, are not entirely satisfactory to the works technician who has not been led to modify, very much, judgments based on practice and empiricism. He suggests four directions in which new possibilities in carbonisation should be investigated:

1. The utilisation in standard coke ovens of coal of low rank associated with good quality coals, by means of suitable binders (briquetting) or simple mixing.

2. In continuous retorts very highly swelling coals can be diluted with low- or non-coking coals or with coke breeze, or the swelling may be reduced by preliminary heat treatment.

3. Modifications of design of carbonising chambers should be studied in order to obtain 'rapid and prompt homogenisation of the temperature of the coal in the chamber,' favouring the use of an extended range of coals and in the specific case of continuous retorts reducing difficulties due to excessive swelling.

4. The use of low temperature techniques.

Prof. Malquori notes that 'researches into the position and the function of the oxygen present in coals are of particular interest.'

The paper reviews the several processes now more or less established for the complete gasification with and without the use of oil enrichment. It notes, however, that the cost of production is comparable with that in traditional practice in spite of low capital charges which are offset to some extent by the high degree of automatisation of equipment.

Hydrogenation is briefly referred to—quoting, among other sources of information, the results of the investigations of Dr. Dent at the Midlands Research Station in England. Other techniques are those directed to the use of pulverised or very small coals, particularly in the fluidised bed. The gasification of petroleum products is briefly surveyed, with a final paragraph on natural gas and the transport of such gases to Europe by sea from the Middle East and Venezuela.

The paper, though necessarily general, is a useful survey of research in this field actually in progress and projected for the future.

DISCUSSION

M. R. BRUNELLI (France) referred in his contribution to the fact that the transportation of liquefied natural gas from the Middle East, Venezuela and the Sahara might have a determining rôle in making the gas industry in Europe more like that of the U.S.A.

Mr. J. E. DAVIS (G.B.) said that the rôle of research was now much more widely appreciated by engineers and members of boards. Operational research continued the work of the laboratory and the pilot plant.

PIPE CORROSION PROTECTION

M. de Brouwer claims that cathodic methods in suitable combinations have achieved complete success over a period of 25 years in the protection of buried steel pipes even when the coating has deteriorated and the metal is bare in the soil. Roots of trees, for instance, which in some cases penetrate the coating, are found to be killed by the electric charge. Methods include polarised drainage, forced drainage, the drawing-off of current and reactive anodes.

Several problems are still to be solved for pipes that cannot be protected by these methods, such as pipes in cast iron and in steel with rubber joints which lack electric continuity. In 1955, a Commission on Corrosion was set up by the three Benelux countries. This Commission has issued a questionnaire, a copy of which is attached to the paper, with a view to collecting the maximum of information on the subject.

DISCUSSION

The paper was introduced by M. A. Weiler (Belgium) as M. de Brouwer was unable to be present. He was convinced that cathodic protection of buried pipes could be 100% successful at a cost of only 1% of the total capital cost of the installation. The running cost amounted to little more than the cost of the comparatively small amount of power required.

M. A. RENAULDON (France) said that cathodic protection had been in general use for all transmission lines installed in France since 1948, while older pipelines were also now being protected. Good coatings should also be provided, even if they appeared to be comparatively costly, to avoid high power costs. In Paris, networks, which were always a problem, were now being protected successfully. He would like to have some information about corrosion in clay soils, particularly if bacteria were present. Methods of internal protection were being tested under different conditions and this was related to the economics of dry gas.

Mr. D. L. COPP (G.B.) said he was able to give some figures relating to complete protection in London clay. Measured between the steel pipeline and the surrounding ground with a $Cu/CuSO_4$ half cell, in the absence of bacteria the negative voltage should be at least .85, while in the presence of bacteria it should be not less negative than .95 volts.

Complete Protection in London Clay

He had under cathodic protection a pipeline, 24 in. o.d. and 17 miles in length, largely in clay, fully protected with a current of 300 milliamps per mile of length. While the pipes were coated with a bitumen and asbestos sheathing with fibreglass wrap, the welded joints were covered with a P.V.C. tape coated with a pressure adhesive. This tape was very good and he would use it on the whole pipeline if it was not so expensive. Success was being achieved in completely arresting the incidence of leakages from old network systems by applying impressed current, thus avoiding the enormous cost of renewing the pipes.

M. WEILER in reply said he used a high negative potential at the drainage point so as to protect the remote ends of the system and also to overcome the ill-effects of stray currents. It was necessary to ensure electrical continuity in the pipelines to be protected and to insulate them from refinery or other manufacturing plant. In Belgium there was a surplus of drainage current available from the transport system. Although gas in Belgium was not dehydrated, no internal corrosion had been noted in 50 years.

Cases had been observed when plant roots had completely penetrated new pipe coatings and these roots remained alive even with 25 volts potential difference. The roots, which were up to 1 cm. in diameter, had even penetrated fibreglass wrappings, but no corrosion was found and the surface area of the damage was not large.

I.G.U. ROME—
'Gas Journal' Abstract

SESSION 3 A

IGU/4-58 Ignition Safety Devices on Domestic Gas Appliances.
Report by the German Association.

IGU/13-58 Effects of the Rapidly Expanding Use of Gas for Winter Heating on Service Efficiency and Safety.
Report by the Italian Association.

IGU/21-58 Different Methods to meet Gas Peak Loads, with particular reference to Natural Gas, Oil Gas and L.P. Gaz.
Paper by Ing. Franz Schüssl, Direktor der Industriebedarf G.m.b.H., Austria.

IGU/26-58 New Methods for Distribution Design.
Paper by George S. Young, President, the Columbia Gas System, New York.

IGU/42-58 Distribution of Straight Natural Gas at 300 mm. (12 in.) w.g.
Paper by D. Tinbergen, Vice-President, 'Staatsgasbedrijf,' Netherlands.

SAFETY DEVICES ESSENTIAL

IGNITION safety devices on domestic gas appliances are reported upon by J. Kärrner on behalf of a working party of the German gas industry. Risks to the life and health of consumers arise from the accidental escape of unburnt gas, resulting in the possible production of explosive mixtures with air and poisoning due to the presence of carbon monoxide in the gas. Gas appliances, particularly for domestic use, must therefore be equipped with safety devices to prevent escapes of gas due to faulty or careless manipulation. The more widely dispersed the use of these appliances the more urgent the necessity to guard against the risks involved in their use by aged or inattentive consumers.

The elimination of CO—detoxification—is practised in Switzerland, where the percentage of water-gas used is high, and in some parts of Germany, but in general the additional cost is found to be unwarrantably high. Such elimination does not reduce the risk of explosion and indeed may give a false sense of security leading to 'imprudent manipulation of appliances.'

Two main systems are described for the automatic shutting-down of gas supply when the pilot light has failed—the bimetallic expansion strip and the thermopile. These can be readily applied to the cooker. The equipment of large-scale cooking ovens with safety devices is a definite necessity. The automatic ignition of hot plate burners from a central pilot flame is particularly liable to risk; and two safety devices are described and illustrated.

Safety devices are largely applied to water heaters, particularly where the heater is away from the point of use and where regular observation of the burner is not possible. The balance of opinion is in favour of thermoelectric security.

For the gas radiator, security devices are more and more demanded because of the risk of explosion in an enclosed combustion space. The thermopile device is most in favour.

For the future, it must be conceded that the fitting of safety devices involves an increase in the cost of production, but this must be faced as necessary to the continued expansion of the industry. Costs must be kept to the minimum by the rationalisation of production.

Producers and distributors of gas must maintain, in the future even more than in the past, a supply at constant quality and adequate pressure. And distributors will be obliged to organise a system of after-sales inspection and maintenance at the premises of consumers to ensure that appliances are being satisfactorily and safely used, to maintain the reputation of gas in the eyes of the public.

DISCUSSION

Ig. KARRNER (Germany) in introducing his paper said that safety must be attained automatically. Devices must not be complicated, must be reliable, fulfil their function quickly, be cheap, simple to maintain and must not rely upon an external source of power.

Most devices incorporated either bi-metallic or thermoelectric controls, but the latter were more expensive.

In Western Germany it would soon be the case that all ovens would be fitted with safety devices.

Mr. L. W. ANDREW (G.B.) said the most common misuse of the ordinary cooker was failure to light the gas after it had been turned on. Although ignition safety devices added to the cost, they were urgently needed. Automatic ignition was not yet general in Great Britain but it was important that it should be developed in a cheap and reliable form. He thought a low-running cost electrical filament over each burner was a line to be followed.

January 1 Deadline for Hotplates

From January 1, 1959, it would be a condition of approval in Great Britain that hotplate burners should be fitted with automatic ignition, and in time this would apply to the oven burners also.

Mr. DE VOOGD (Holland) wondered if the industry was moving in the right way by concentrating on ignition safety devices, as most accidents were caused by CO. A Swiss report showed that there was a close relation between fatal accidents and the CO content of the gas. In the Netherlands 50% of accidents were due to leakage from pipes and these could be eliminated by the reduction of CO to safe limits but not by ignition safety devices. Would it not be more economical to produce gas with a low CO content? Peak loads could be met by propane/air instead of water gas.

Herr E. A. SCHAACK (Germany) thought that the additional cost of safety devices on cookers would be willingly

paid by consumers. He proposed the slogan "Gas safer and more modern than ever before."

M. W. Hunzinger (Switzerland) described the detoxification plant in Basle. Price could not be ignored and the cost of safety devices was high, adding possibly one-third to the cost of cookers. He agreed that it was preferable to reduce the CO content of the gas than to fit safety devices. The explosion hazards in cookers could be reduced by the manufacturers. He did not think it advisable to adopt the slogan proposed by Herr Schaack because they must not stress the danger of gas.

M. A. AMSLER (France) favoured the use of an external electrical source of power for ignition devices. 'We must,' he said, 'have totally automatic kitchen appliances.'

M. F. FIRPO (Italy) said that ovens must have automatic ignition, and these were being introduced in Italy; but keeping the cost low was very important.

PROBLEMS INDUCED BY EXPANDING SPACE HEATING

Effects of the rapidly expanding use of gas for winter (space) heating on service efficiency and safety, with measures taken to cope with them and experiences acquired, were reported upon jointly by the Italian and Austrian Gas Associations. An extensive and very detailed questionnaire was issued in some cases to selected undertakings in member countries, and the answers are mostly informative and interesting. Some of the selections are a little surprising. Why, for instance, two quite small townships in Denmark and Paris in France? Surely Copenhagen would have been more representative of the bulk of Denmark's population.

As might have been expected, trends in the U.S.A. are very different from those in Europe. The vast supplies of natural gas in North America, coupled with the high standard of living, have resulted for many years in the rapid growth in the use of this convenient, labour-saving heating medium in a country where whole-house heating, particularly in the populous Northern States, is common practice. In France, advance in this direction has been relatively rapid since the war; in Germany advance is proportionately comparable but the final figure is still very small. In Great Britain the rate of advance is much lower.

Two areas, the North Thames and the North Western, were selected in Great Britain. One is struck first by the relative paucity of statistics in Great Britain relating to different uses of gas. In the second place, one notes that the same cause—the greater popularity of solid fuel—differentiates the North West from the North Thames as that which differentiates, say, Western Germany from other European countries.

The questionnaire was perhaps a little too lengthy and elaborate to elicit a clear-cut picture of the situation except perhaps that of the almost universal use of oil gas plants to cope with peak loads produced by the growing use of gas for space heating—as the North Thames Gas Board put it, peak load plant is 'chosen on the principle of the minimum cost of installation, of the lowest labour cost and of the maximum possible efficiency.' But the answers to the questionnaire are a veritable mine of information on the practice of the several member countries of the Union.

FILLING THOSE PEAKS

This paper, a factual account of the methods used in different member countries to meet peak loads (by F. Schüssl, Austria) might be regarded as a supplement to I.G.U./13-58. Generally, peak loads are met by the provision of low cost plants for the gasification of coal or oil, producing a rich or poor gas, to be mixed with coal gas produced by carbonisation. The choice of gas is influenced by the saleability of coke and the availability of gas or coking coals in the particular locality.

In Italy, for example, the coke market is relatively weak and all coals are imported. Thus at Naples, gas-making plant consists of complete coal gasification plants (Gaz Intégral) making gas at about 335 B.t.u. per cu.ft. enriched by refinery tail gases to 440 B.t.u. per cu.ft. Oil cracking plant is also installed. At the Rome gasworks there are now five lines of Gaz Intégral making nearly 8½ mill. cu.ft. of gas. The last line to be installed is equipped with oil carburation to produce gas at 440 B.t.u. per cu.ft. Base load is taken by carbonisation in vertical chambers.

French practice in the use of petroleum products to take peak loads is well-known. In the new large coke ovens at Alfortville, south of Paris, peak loads are met by a big installation of water gas plant and an oil cracking plant.

In Germany practice is mainly similar. At Stuttgart there is an installation based on the purely thermal cracking of crude oil. England is dismissed in a very few lines, remarking that peak loads are met by C.W.G. with some 'experimental' coal complete gasification plants!

The very large plant for the gasification of coal or coke installed by the Tokio Gas Company at their new Toyosu Works is described in considerable detail.

The interesting inference to be drawn from this paper is that the use of plants for the complete gasification of coal with or without oil enrichment is more widely spread than was generally realised.

DISCUSSION

This paper was introduced by Ing. F. Schüssl (Austria) who stressed that the problem of meeting peak loads had to be solved in different ways in different countries according to the market prices of the fuels available. In the report it was stated that the tendency was to meet peak loads with fuels other than coal, but since then the position had changed somewhat and certain grades of cheap coal might now be used. The plants described in his report, although mainly developed for peak load, could in many cases also be used for base load.

The Chairman said that even in Belgium, where coal was plentiful, there was a tendency to use refinery gas for peak loads.

Mr. C. SCHLEGEL (U.S.A.) briefly described a C.C.R. plant recently brought into use at Philadelphia which was larger than any described in the report.

Dr. JAMES BURNS (G.B.) said they had had much opportunity in England of studying this very difficult but interesting problem. In London the maximum load on the coldest day in winter was sometimes as much as four times that of the minimum day in summer; and on a weekly basis it was quite usual for the maximum week's output in winter to be three times the minimum week's output in summer.

His board tended to sub-divide the principal loads

throughout the year into base-load (365 days) followed by seasonal loads (up to 200 days) and, finally, peak loads (approximately 30 days per annum). These three loads tended to merge one into the other, but for purposes of analysis it was useful to consider the three as bases. Each particular load required different treatment in order to produce gas as cheaply and as efficiently as possible. Up to the present time base-load gas in England was, generally speaking, produced from coal; the plant required was expensive but the raw material relatively cheap. Seasonal load gas was generally produced in the form of water gas or oil gas, but it should be noted that in parts of England remote from the coalfields oil gas was, in fact, cheaper than base-load coal gas. Finally, peak load gas presented the most difficult problem of all, but the general principle should be followed that it should be made in plant of the absolute minimum capital cost and with the minimum number of men—as a corollary, of course, the raw material costs might be higher. For North Thames load conditions they had found it advantageous to store ready-made gas in the form of butane and propane/butane mixtures against extreme peak requirements. The gas characteristics allowed the inclusion of approximately 10% of butane/air mixtures and this 10% increase was invaluable for peak load purposes.

A further possibility was the production of high-peak gas in the water gas plants, and here again the basic principle held that the capital requirement was negligible; there was, in fact, no extra labour requirement at all.

Future developments would, in his opinion, be more and more towards the use of stored gas for peak load purposes and it might well be they would include in the base-load plant make-up a greater degree of flexibility in specific gravity and Wobbe index in the gas in order to allow a greater inclusion of heavy gas at peak load times.

Importance of Space Heating

In his opinion, the industry could not afford to disregard the space heating load. It was recognised that the amount of peak load gas was relatively small and the extra costs when spread over base load and seasonal load might not be very great, but the commercial side of the industry could do much to improve this position by increasing its sales of seasonal load gas by concentrating on the sale of appliances which would be used over the whole heating season. Two benefits would arise:—

1. The amount of gas over which the extra costs of peak load gas would be spread would be greater and the ill-effect less.
2. Even more important, the peak load problem would be reduced as the specially selected gas-burning appliances would be operating at a very much bigger load factor than appliances designed only for very occasional usage.

'G.I.' Plant

The author had included many interesting types of plant in his survey; but, frankly, for English conditions most of them were suitable for base load and seasonal load only owing to the capital costs.

The Gaz Integral plant was especially attractive in England when it was put in as there was a very good market for coke at the point selected for its construction and, furthermore, there was a considerable price difference between the coal suitable for gasification in the G.I. plant and that for carbonisation.

The plant required a very special coal quality, and the following represented the optimum characteristics:—

Size, 2 in. × 1 in.
Swelling No., 1½-2½ (some slight caking power)
Ash content, 5 to 7%
Moisture content, up to 10%.

These coal characteristics were optimum for conditions in London where freight rates from the coalfields were high.

After two years experience in operating the G.I. plant he would say that the process was completely reliable and, for the conditions obtaining in London, produced gas cheaper than by carbonisation. Thus, in London it was considered as a base-load plant. At the present time standards of valve operation and hydraulics on the plant were being improved, and greater reliability with lower costs was expected.

THE McILROY ANALYSER

George S. Young, President of The Columbia Gas System, U.S.A., describes a new method for the design of complicated distribution systems.

The McIlroy Fluid Network Analyser is an electric analogue system and this paper should be read in conjunction with I.G.U./30-58. The system depends basically on the development of special electric resistors, called Fluistors, whose resistance varies as the 0.85 power of the current passing through them. 'By virtue of their spcial characteristics the formula expressing the relation between the potential drop across them and the current flowing through them is: $V = KI$ 1.85. This is analogous to the fact that the pressure drop in a pipe line is proportional to the 1.85 power of the flow rate. In other respects an electrical circuit simulates the flow of a gas in a pipeline system. Thus the analogue computer (incorporating the Fluistor) meets all the requirements for the simulation of gas flows by an electric current.'

The system is described with illustrations, and a typical solution is given for a vastly complicated problem.

Quoting from Mr. Young's conclusions: The natural gas industry in the U.S.A. has experienced a phenomenal rate of growth in the last 10 years. The necessary vast expenditures on the expansion of distribution systems can be intelligently made only if an engineering analysis of the total plant has been completed—both on present-day and anticipated future requirements. Such an analysis using conventional methods is impractical. The McIlroy Fluid Network Analyser provides a means for reducing the task of utilising the available data for a total plant analysis to a workable magnitude. It makes it possible to develop the optimum long-range programme for plant improvement.

DISCUSSION

Mr. GEORGE S. YOUNG in introducing his report stated that the total use of fuel in the U.S.A. had grown enormously in the past decade and was expected to double today's figure by 1975 and that natural gas represented about 27% of fuel now used. It was therefore a commercial proposition to use costly computers such as the McIlroy when designing gas distribution networks.

M. A. RENAULDON (France) said the report formed a valuable supplement to the one (I.G.U./30) he had presented that morning. He was now working on a scheme for the distribution system of Lyons and so the subject was of particular interest to him. He agreed that the McIlroy was an ideal type of computer, but in France they had anticipated difficulty in importing the Fluistors and he had therefore been using with good results a computer operating on a visual control system.

NATURAL GAS—'STRAIGHT' OR REFORMED?

The so-far disappointing results of the search for deposits of natural gas in this country render it difficult for the English gas engineer to visualise the growing significance of natural gas in some other European countries. 'Before the last war natural gas outside the United States scarcely played a part in the gas industry,' but in the last 10 to 20 years 'in Austria, Italy, France, Germany and Holland—to mention but a few European countries—natural gas has been demonstrated either in quantities which have caused considerable shifts in the overall energy balance of the country concerned, as in Italy and France, or else in quantities large enough to bring about a revolution within the limits of the gas industry. The European gas industry is adjusting itself to the new conditions, spurred on by the general power famine and the slowly but surely rising cost of coal-getting.' Natural gas reserves may be expected to increase substantially in many countries during the years to come.

The questions which Mr. Tinbergen asks, in relation to his own country, are whether the available natural gas should be distributed straight or reformed, and at what distribution pressure.

Apart from pressure he shows that the necessary storage capacity for straight natural gas is from 45 to 50% of that for coal gas. The transport capacity of an existing system is increased from 2 to 1.65 times with a saving of 20% in the cost of a new distributing system.

Discussing the case for reforming, he comes to the conclusion that this is only justified where 'natural gas cannot be guaranteed to be in supply over a sufficiently long period,' which he puts at about 15 years.

For the distribution of natural gas direct to the consumers a Committee set up in the Netherlands recommended the use of a pressure of 300 mm. (12 in.) w.g.

'The soundest argument against the distribution of pure natural gas is the fear of too high a loss of gas,' and Mr. Tinbergen discusses in considerable detail the measures which can be taken to reduce this to tolerable limits. ('In the city of Utrecht, a dog has been trained to smell along the street above the pipelines to detect escaping gas.')

As to the future, there are already many localities in which gasworks are converted to distribution undertakings for natural gas. It is, he thinks, essential that standard international conditions should be laid down, 'so that the valuable energy formed in the course of centuries, which will perhaps be consumed by our generation in a few years, will not at least be wasted.'

DISCUSSION

Mr. D. TINBERGEN (Holland) in introducing his report said the question as to whether to supply straight natural gas or reformed natural gas arose in several European countries where only limited supplies of natural gas were available and would be of interest to those countries which did not now have natural gas but might import it. In the Netherlands the smaller towns mostly distributed straight natural gas and the larger towns reformed it.

Enjoying the sunshine in Rome—Mr. and Mrs. T. S. Ricketts

It was irrational to degrade fuel and therefore a straight supply was to be preferred, but this entailed adjustment of consumers' appliances. In some cases this might mean renewal of unsuitable appliances, but this was possibly in the best interests of the industry taking a long view.

Effect on Unaccounted-for

A special Committee had recommended a pressure of 12 in. w.g. for straight supply which corresponded to 3 in. for town gas. This pressure resulted in a very pronounced increase in unaccounted-for gas and some people thought it too high. In his view this advantage, which only applied to the early years following change-over, should not too much affect a choice which would apply for possibly 40 to 50 years. He hoped there would be international agreement on the quality and pressure applicable to a supply of straight natural gas.

The CHAIRMAN said he thought the supply of straight natural gas was to be preferred to reforming, but he would like more information as to the optimum pressure. He asked how much the unaccounted-for gas percentage had risen.

Mr. TINBERGEN said unaccounted-for gas had risen from about 6% to 18%, but this he thought was only a temporary effect.

M. A. RENAULDON (France) said that the optimum pressure had been much discussed in France; and while it was thought that 12 in. w.g. was possibly the ideal, they had standardised for practical purposes on 8 in.

Mr. TINBERGEN said they should exchange information, and repeated his hope that there would be international agreement on standardisation of supply. He thought that countries with existing local standards would agree to compromise to attain the more general standard.

A further instalment of our review of the proceedings of the 10 Technical Sessions will appear next week. In our preparation of this material we are greatly indebted to the collaboration of Mr. C. D. SHANN, M.A., M.INST.GAS E., Manager of the Overseas Gas Division of William Press and Son, Ltd.

Purchasing Officers' Association

'THE Organisation of Purchasing in Industry,' a report of the Purchasing Research Sub-Committee of the Purchasing Officers' Association, covers the integration of purchasing and stock control and the way in which the joint function should be fitted into an industrial organisation. The principles on which the unified function should be based are described and illustrated by organisation charts. In addition to the question of structural organisation and the relationship of purchasing and stock control with other functions the report deals with departmental organisation and the detailed procedures involved from requisition through issue of orders, progressing, receipt, storage, control, and issue of stocks, to payment and the disposal of scrap or surplus materials. The report thus gives a complete picture both of the administrative position of a purchasing and stock control department in a modern industrial organisation and of its detailed responsibilities and activities. The report, price 1s., may be obtained from the Association, at Wardrobe Court, 146A, Queen Victoria Street, London, E.C.4.

Smoke Density Telescope

A NEW portable instrument which should be of value to local government smoke inspectors is a smoke density telescope designed at the Fuel Research Station of the Department of Scientific and Industrial Research. Tests have shown it to be a simple means of assessing the density of volumes of smoke issuing from chimneys—and more convenient to use than the standard Ringelmann charts.

It was on view at an exhibition in Llandudno, held in conjunction with the annual conference of the National Society for Clean Air.

Smoke can be viewed through the telescope and its density compared with two translucent screens fitted in the body of the telescope and corresponding to No. 2 and No. 3 Ringelmann shades.

The smoke and the screens are seen against the same background and estimations of darkness are at least as accurate as those made with the standard Ringelmann charts. (The Clean Air Act states that it is an offence to emit smoke as dark or darker than Ringelmann No. 2 for more than very limited periods).

Law Course

THE whole of the legal groundwork necessary to industrial managers and executives is covered in a three-day course on industrial and factory law to be given on October 21, 22 and 23 by Mr. Harry Samuels, O.B.E., barrister-at-law, under the auspices of the Industrial Welfare Society. The course, which will be held at the Society's headquarters, Robert Hyde House, 48, Bryanston Square, London, W.1, is completely up to date with the latest changes in legislation, and therefore also serves as a refresher for executives who have not considered the subject for some time.

INVEST IN

BENZOLE RECOVERY

SULPHUR REMOVAL

In terms of benzole extraction a Sutcliffe Speakman plant pays for itself over and over again: extraction is consistently high—100% having been recorded in some instances. If the problem is the removal of organic sulphur, particularly from gas used in industrial processes—e.g. glass-making, metal annealing—then Sutcliffe Speakman plant is again the answer. These units are compact, clean working, economical to run and automatic in operation. Capacities range from 100,000 cu. ft. per day: there is no upper limit. Sutcliffe Speakman are specialists in the manufacture and industrial use of carbon. They will be pleased to study the needs of any gas undertaking or gas user and advise on benzole extraction or sulphur removal.

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